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Report
ON
WHITE PINE BLISTER RUST CONTROL
SOUTHERN APPALACHIAN REGION
1950

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Room 208, Federal Building
HARRISONBURG, VIRGINIA
January 1951

ANNUAL REPORT

ON

WHITE PINE BLISTER RUST CONTROL

SOUTHERN APPALACHIAN REGION

1950

United States Department of Agriculture
Bureau of Entomology and Plant Quarantine
Box #507
Room 208, Federal Building
Harrisonburg, Virginia

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PART I

REPORT OF BLISTER RUST CONTROL

IN

THE SOUTHERN APPALACHIAN REGION

1950

FOREWORD

This report is being prepared in much the same manner as those of recent years, namely in four parts as follows: First, a general summary of the work and status for the region as a whole. The remaining three parts pertain to lands in state and private, national forest and national park ownerships. An attempt has been made to reduce the number of regular tables. These are all included at the end of the report.

Summaries for the current year, as well as previous years are set up to show accomplishments by ownership and by operating agencies. Funds are appropriated to the Federal agencies for work on their lands while that on state and private ownerships is jointly financed by Federal and other allotments. This is referred to as the cooperative project or sometimes as work by the Bureau. The acres covered by a given agency is not necessarily the same as the acres covered on lands owned by that agency, since it is frequently necessary for the Forest Service to work adjacent privately owned lands or vice-versa. The National Park Service performed very little work on privately owned lands but it is necessary for the Blue Ridge Parkway to cover a large amount of "other" land in order to protect white pine on their holdings which usually consists of a narrow strip on each side of the motor road.

Ribes pulled and man-days expended are listed only by operating agencies. It would be extremely difficult to keep these by ownership for the current year and impossible to do so in accumulative tables due to changes in land ownership after eradication had been performed. Table No. 7 shows the gross accumulative acres covered, ribes pulled and man-days expended since the beginning of the control program. It included the work performed on areas which were at one time a part of the control program and later abandoned because of reduced pine values due to burning, cutting, loss from suppression, blister rust and any other cause.

Major Accomplishments in the Region to Date:

Survey work: A detailed survey of white pine in the region is completed in most counties where wild ribes are in association with an appreciable amount of white pine. In other counties a less detailed survey was made. This shows about $3\frac{1}{4}$ million acres supporting sufficient white pine to justify the cost of protecting it from the rust. The first estimate of white pine acreage was made by J.A.Cope in 1930. In a few months he made a survey to determine white pine and ribes distribution as well as scouting for the rust, which indicated 808,000 acres of white pine (5% or better) in the region. At this time Mr. Cope gave us much of our basic knowledge regarding ribes and white pine distribution.

Maintenance: Along with the $3\frac{1}{4}$ million acres of white pine, we have a control area of over 7 million acres. Of this control area 94% has been placed on maintenance. By this we mean that the ribes are naturally absent or have been reduced sufficiently to give reasonable protection to the pine and hereafter only periodic re-examinations and work will be necessary to maintain this protected condition.

Quarantine: Since the beginning of the control program, State quarantines were established. In some cases State Plant Pest Control Laws were amended to provide for establishing effective quarantines for blister rust as well as other plant pests. These quarantines have been modified from time to time to keep abreast with changing conditions in the field. Attempts have been made to keep them as simple as possible consistent with obtaining maximum benefits from them. At present the movement of ribes plants from any point into the white pine producing section of the states is generally prohibited. The interstate movement of visibly infected white pine is prohibited. The movement of white pine into a few of the states is still prohibited except under certain safeguards. We are now considering permitting the movement of white pine anywhere within the region unless it is visibly infected with the rust since it now appears that spring spores from the pine could remain viable while being carried by the wind throughout any part of the region.

Nursery Sanitation: Intensive blister rust control work has been performed around nurseries producing white pine to insure rust-free planting stock. In the beginning, all nurseries producing any quantity of white pine were included in the program but only those nurseries producing white pines for reforestation purposes have been protected during the last decade. This change in the nursery sanitation program was made when it was deemed impractical to attempt to protect ornamental pines on privately owned lands and the quarantine on interstate movement of ornamental pines was changed accordingly.

White Pine Inventory: An estimate was made of the volume and value of white pine in the region during 1950. Complete information is not yet available. It appears that the present crop, mature and immature, represents about $5\frac{1}{2}$ billion board feet with a value of over a hundred million dollars.

Planting controls: Close cooperation has been established between blister rust control men and those who direct the planting of white pine to avoid white pine being planted in areas supporting numerous wild ribes. Several years ago this happened in some instances which resulted in either abandoning such plantations to the rust or spending very large amounts of money to protect the trees. This is accomplished through our learning all possible about the distribution of ribes regardless of their proximity to white pine and making this information available to representatives of the U. S. Forest Service, Park Service, Soil Conservation Service, T.V.A. the Extension Foresters and State Forestry organizations in the different states. Where white pine is widely used such contacts are also maintained with County Agents. Partially as a result of this service, white pine planting has been increased in favorable sites and almost eliminated in unfavorable ones. The rate of white pine planting is reflected by the numbers grown in nurseries. In 1932, there were about half a million white pines being grown. This figure remained about the same in 1940 but in 1950 over 12 million were being produced for reforestation within the region.

Costs: Blister rust control work was begun in the region in the form of scouting for the disease sometime prior to 1911. From about 1928 - 1932 a small amount of work was carried on consisting mostly of nursery sanitation and a little ribes eradication on the George Washington National Forest. More eradication was carried on during 1933 under the CCC program and for a few weeks in the fall in Maryland under other emergency funds. Large scale control work got under way in 1934. Since that time we have spent for administration, supervision, labor and all other phases of the blister rust control program, slightly less than \$1.00 per acre of white pine. The average expenditure per year during this 17-year period has been approximately \$190,000. During 1950 the amount spent was \$26,000 less than the average. If we take into account the comparative value of the 1950 dollar with the 1940, this difference would amount to nearer \$50,000, or a reduction of almost three-fourths below the 17-year average. The cost of maintaining control in the future is very difficult to estimate but if our expenditures were to average \$150,000 per year the second \$1.00 per pine acre would carry the program about 22 more years.

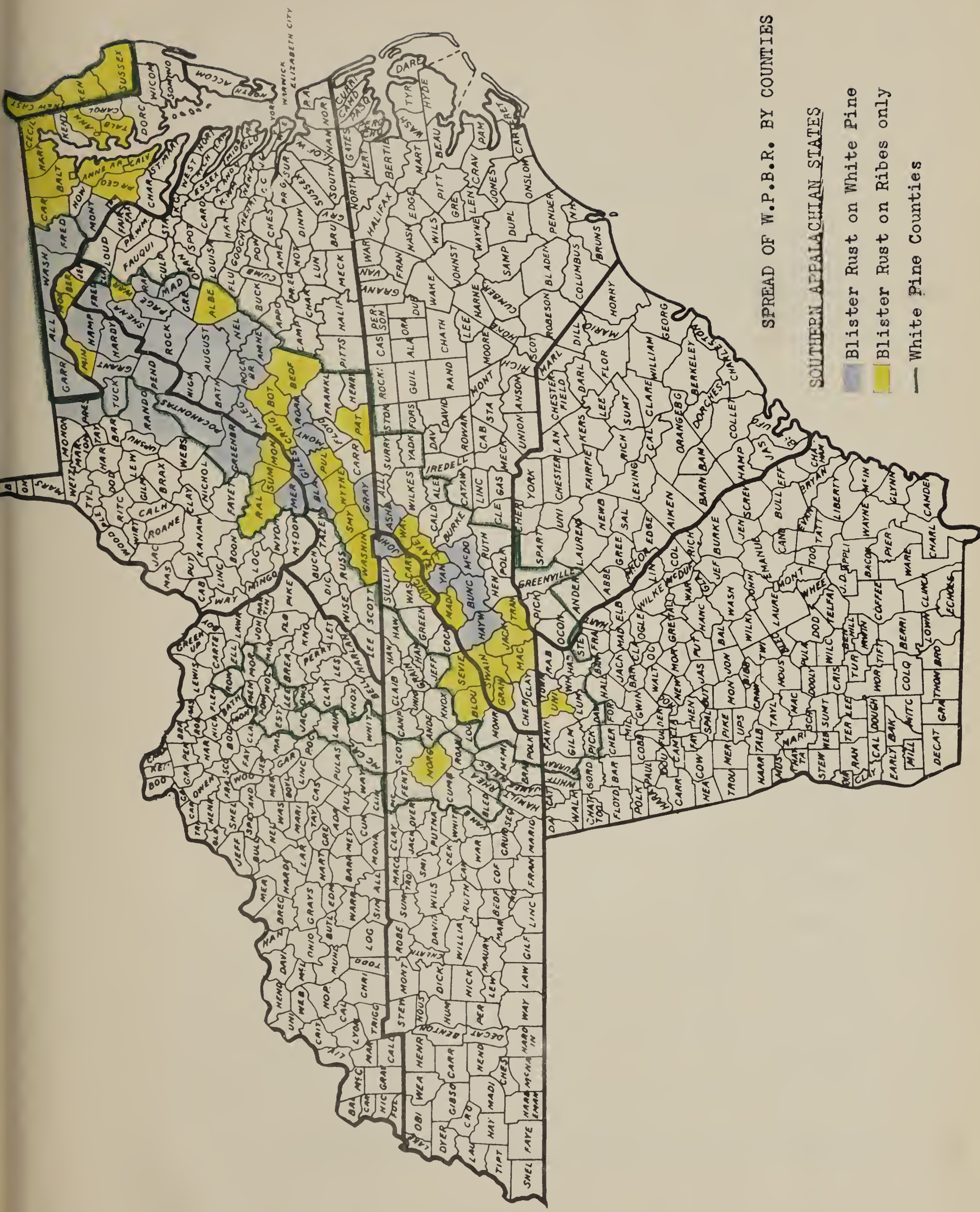
Status of Blister Rust

Weather conditions during 1950 were apparently unfavorable for the long-distance spread of blister rust from pine to ribes. The only changes in the status map, as compared to last year, is that blister rust has been found on white pine in Amherst County, Virginia. This infection was of light intensity over some three square miles and originated about 1941. In southwestern Virginia, North Carolina and Tennessee, blister rust was found only in the vicinity of known infected white pine except for one location near Grandmother Mountain on the Blue Ridge Parkway. Infection has been found on ribes in the general area intermittently since 1941. We believe there is rust present in that area on scattered white pine but to date none has been found. Extensive scouting trips were made throughout eastern Kentucky and Tennessee. Many cultivated and wild bushes were examined but no rust was found. The map on Page 5 shows the distribution of rust in the region to date.

White Pine

White pine survey was conducted in Maryland, North Carolina and Virginia. A moderate amount of this work will be carried on during 1951 in Virginia and North Carolina, after which time it is estimated that very small percentage of the total time will be spent on survey. This phase of the work, of course, will never be entirely completed due to the planting and natural spread of white pine. Table 1 in the last section shows the results of the survey during this year. A reconnaissance survey was made of white pine in the northwestern counties of West Virginia. Some valuable stands were found but no detailed survey is planned for the present. There is pressing need for far more ribes eradication in the eastern counties than there are available funds for the work.

Plantation and Nursery Stock: Due to war conditions there was a marked reduction in production of nursery stock and planting of white pine during the period 1942-1945. After the war the states took steps to increase the production of white pine planting stock. While all of the nurseries had been inspected before the war it was considered desirable to follow up on this work this year. We find white pine is being grown in State Forest Nurseries in six states and the TVA nursery in Tennessee. The Forest Service nursery at Parsons, West Virginia was leased to the State late in 1950. Over 4 $\frac{1}{2}$ million white pine were planted during the year and a nursery inventory indicated over 12 million trees are now being grown. Considerable interest is being shown in the use of tree planting machines and there is every indication that the planting program will increase considerably in the future. Table A on page 6 shows white pine planted during 1950 and the nursery stock on hand at the end of the year.



SPREAD OF W.P.B.R. BY COUNTIES

SOUTHERN APPALACHIAN STATES

- Blister Rust on White Pine
- Blister Rust on Ribes only
- White Pine Counties

TABLE A
WHITE PINE REFORESTATION - 1950

State	White Pine Planted During 1950	White Pine In Nursery Fall of 1950
Alabama	75,000	—
Delaware	38,450	*
Georgia	50,000	—
Kentucky	—	29,000
Maryland	248,100	517,000
North Carolina	2,421,950	1,975,000
South Carolina	—	—
Tennessee	649,500	—
Virginia	450,025	650,000
West Virginia	645,108	1,146,500
State Nurseries	4,578,133	4,317,500
T.V.A. Nursery	—	7,800,000
U.S. Forest Service	—	60,000
Federal Nurseries	—	7,860,000
TOTAL ALL NURSERIES	—	12,177,500

* White pine is produced but unusual conditions this season prevented an accurate inventory of the stock at this time.

Eradication

Ribes eradication was conducted in six states in the Region. Following the trend in recent years, the ribes per acre were slightly less and the average acres covered per man-day remained about the same. About one-fourth of the ribes pulled came from Maryland and the large portion of these were pulled on 180 acres of initial working. This was made necessary by extending a white pine plantation. Practically all of the eradication work was performed by three-man crews with five-man crews being used where the heavier ribes concentrations were found. No further efforts were made to use the one-man crew since this method did not show any marked advantage over the three-man crew. A summary of the ribes eradication work is given by states in Table 2, by operating agencies in Table 5 and the acreage covered by ownership is shown in Table 6, all in the last section of this report.

Checking

There was a slight decrease in the acres covered on both post and regular checking as compared to last year. This represents a general reduction in the amount of work due to decrease in funds. Only about three-fourths of the area covered by crew on eradication were given a formal regular check. We have found where ribes population is low at the time of eradication and where experienced men are employed, that it is frequently not necessary to spend time in systematic sampling. Instead, skilled foremen or supervisors make a general examination of the area and either accept or reject the work of the crew. This same technique is being employed in some cases on post checking. This general method lends itself very well to situations where ribes occur on specific sites and on a relatively small percentage of the total control area. Post checking, either by systematic sampling or general examination will remain one of the major jobs in the control program for a long time. The summary of the checking by states is shown in Table 3 in the last section of this report.

Investigational Work

Observations of ribes treated with 2,4,5-T in water during 1949 were made early in 1950. Although a more satisfactory kill of *R. missouriensis* and *R. curvatum* were obtained from use of 2,4,5-T than 2,4-D, the percentage of living stems still left much to be desired. Most of the older stems were killed but basal sprouting was profuse by late summer.

Considering the success some agencies, firms, and individuals have had with a combination of 2,4-D and 2,4,5-T when used with oil it was decided to try these materials on *R. missouriensis*, *R. curvatum*, *R. glandulosum* and *R. odoratum*. The spraying was done in mid-September in Tennessee and North Carolina. The bushes will be checked in the spring of 1951 to determine the effectiveness of this combination.

The resistant white pine grafts obtained from Dr. Riker of Wisconsin in the spring of 1949 are making satisfactory growth. Three succumbed during the first season but none of these showed evidence of blister rust and no blister rust has been observed on those remaining.

It was learned in December that Dr. Riker has been able to propagate white pines from cuttings taken from resistant trees. He is interested in having some of these cuttings, as well as additional grafts planted in the region in association with wild ribes. Cuttings and grafts, along with some checks to be furnished by Dr. Riker will be planted in the spring of 1951.

The Canadian Black Currants that were planted in association with infected white pines and native wild ribes in Ashe County, North Carolina in 1949 have not shown any evidence of blister rust infection during the two years they have been under observation.

Informational Activities

The informational activities program for the Region was conducted on much the same lines and at about the same tempo as the previous year. The blister rust movies were the backbone of the program again this year but they were not used in connection with the fair exhibits as had been the case for the past two years. Cooperators from practically all sections of the Region have requested the films for use in connection with their work. Many favorable comments have been received concerning them.

In August arrangements were made with the Exhibit Service of the Department to build a light-weight exhibit that could be transported easily and set up quickly by two persons. This mechanical exhibit which shows "How Blister Rust Spreads and Kills White Pine Trees" was designed as the result of a suggestion by Field Supervisor Gillispie. It was completed in time to be used at the Virginia State Fair at Staunton, Virginia, the Mountain State Forest Festival at Ekins, West Virginia and some smaller fairs and meetings.

Fewer "Show Me" trips were made in 1950 than in the previous year. West Virginia University Forestry students who usually spend at least a half-day in the field during their summer session at Camp Wood did not make the usual blister rust field trip this year. This was omitted because the area that had been shown to them is no longer suitable for that purpose and better demonstration areas are too far from camp to make the trip in one day. In lieu of the trip, specimens were collected and taken to the camp where they were observed by the students. Blister rust movies were shown and a summary of the control program in West Virginia and the region was presented to them.

Several groups visited the infection area at the head of Bennett's Run in Pocahontas County, West Virginia. This small area of natural reproduction, which has not been protected because of its size and location, is very heavily infected and is an excellent example of the damage that can occur when ribes are not removed. Other cooperators visited the infection plots in Ashe County, North Carolina and Dunmore, West Virginia at different times during the year.

News items regarding rust spreads, survey, and eradication activities were published at opportune times. Program Aid Leaflet - 138, "Give your White Pine a Chance" was prepared and came off the presses in October. This publication, written especially for the Southern Appalachian Blister Rust Control Region should prove a valuable addition to the publications available for distribution.

SUMMARY OF INFORMATIONAL ACTIVITIES

	Number	Attendance
News items published	16	
Radio programs	1	
Motion pictures	82	9,040
Meetings and demonstrations	37	1,060
Exhibits	6	104,855
Publications distributed	4,562	

Personnel:

The maximum personnel load during the year consisted of 231 hourly employees and 17 appointed personnel. The number of active appointed personnel remained 15 during the year. There were no appointments or terminations in this group. Mr. Welch remained on leave without pay due to illness throughout the year. Mr. Ball resigned as Regional Leader, effective December 8, 1950, after being on leave since September of 1949. The appointed personnel during the year were as follows:

1. Regional Office:

J. Curtis Ball	Regional Leader; on leave without pay during year. Resignation effective December 8, 1950.
Henry E. Yost	Acting Regional Leader
John R. George	Assistant Regional Leader
Ralph W. Welch	On leave without pay during year due to illness.
Edward G. Schmidt	Administrative Assistant
Miss Emily M. Lonergan	Clerk-Stenographer
Mrs. Bernice M. Yeakle	Clerk
Mrs. Audrey Franklin	Clerk-Stenographer
Miss B. Frances Gardner	Clerk-Stenographer

2. Field:

George C. Cramer	Field Supervisor, Mt. Solon, Virginia
Clarence M. Fultz	Field Supervisor, Lost River, West Va.
Glenden E. Keaton	Field Supervisor, Pipestem, West Virginia
Walter A. Stegall, Jr.	Field Supervisor, Asheville, North Carolina
Delbert L. Gillispie	Field Supervisor, Arbovale, West Virginia
Martin Q. Miller	Field Supervisor, Staunton, Virginia
Charles A. Rodamer	Field Supervisor, Harrisonburg, Virginia
Miss Joyce L. Cramer	Clerk, Mt. Solon, Virginia

3. National Park Service*

Fields Benton - Checker	Shenandoah National Park, Luray, Virginia
Roy Thaley - Checker	Great Smoky Mountains National Park, Gatlinburg, Tennessee

* National Park Service checkers work only part of the year on blister rust control.

Automotive Equipment

The following vehicles were on hand December 31, 1950:

4 passenger cars
2 suburban carryall trucks
7 sedan delivery trucks
14 panel trucks
1 pick-up truck
1 panel truck, 1½ ton
2 stakebed trucks, 1½ ton
4 ambulance trucks, 1½ ton

35 total

New vehicles obtained during the year were; one passenger car, three sedan delivery trucks and two suburban carryall trucks. Disposals by sale involved four one-half ton trucks of 1939 and 1941 vintage. As a consequence of these transactions our fleet is in much better condition than last year and reflects the following age groups:

Year Model	Quantity	Percent
1950	6	17
1948	2	6
1947	20	57
1942	5	14
1941	1	3
1939	1	3
	<hr/> 35	<hr/> 100%

Costs:

Total expenditures during the year for all purposes were \$164,033. During 1949 they were \$182,934. The cost per effective man-day in 1950 was \$8.90 compared to \$8.78 for the previous year. The average cost per acre, ribes eradication, was \$1.62, compared to \$1.57 for 1949. The increased costs per man-day and per acre are the result of the general price increase. The minimum wage of \$.75 per hour for labor was an important factor in this cost. There is little indication that this cost per man-day will be greatly reduced next year. Our hourly federal employees and some of the State employees will be included in the Social Security Program for 1951. This will add 1 $\frac{1}{2}$ % to the labor cost without making any more time available.

Total expenses for the year are shown on Table 4 in the last section of this report. However, the following recapitulation is given below:

Cash from States	\$16,636
Federal cooperative funds	12,741
Federal administrative funds transferred to field	<u>6,184</u>
Total for Cooperative Work	\$ 35,561
Forest Service	64,572
Park Service	<u>22,050</u>
Sub-Total	\$ 122,183
Federal Administrative funds	<u>40,450</u>
Total Cash	\$ 162,613
State Indirect Aid	<u>1,420</u>
GRAND TOTAL	\$ 164,033

PART II

REPORT OF BLISTER RUST CONTROL

ON

STATE AND PRIVATE LANDS

1950

Delaware
Georgia
Kentucky
Maryland
North Carolina
South Carolina
Tennessee
Virginia
West Virginia

STATE AND PRIVATE LANDS

This section of the report deals with the situation on state and private lands by states with minor references to work on Federally owned lands. Detailed statistics are given at the end of the report regarding the work of the current year as well as accumulative work to date and the status as of the end of 1950.

Delaware

No control work was carried on during 1950. The situation, therefore, remains about the same as that indicated in the 1949 report. Mr. Taber, State Forester, reports that over 38,000 white pine trees were planted for reforestation purposes during the year. The future requirements in order to maintain control in the state will consist of periodic scouting, perhaps some eradication of cultivated ribes and enforcement of the state quarantines to prevent planting of ribes near valuable white pine. Scouting for rust and review of the quarantine procedure is planned for 1951.

Georgia

A small amount of ribes eradication work was done on the Fort Mountain State Park and also Chattahoochee National Forest lands during the year. Considerably less work was found necessary than had been anticipated and the State Department of Parks cooperated very well in this work. No additional blister rust was found during the year although considerable scouting was carried on. Apparently there are no extensive infections on pine in or near Georgia. The year 1950 was an unfavorable year for the long-distance spread of the rust in this part of the Region. We can, however, expect the disease to appear in the future on ribes when weather conditions are favorable and in all probability infection will occur on the pines to a small extent. The present indications are that the work for several years will require little or no appropriation of funds by the State Entomologist's office or the Department of State Parks.

Kentucky

Several days were spent in scouting for blister rust on wild and cultivated ribes in the eastern counties during the year. No rust has been reported. R. cynosbati were found growing wild near Carter Cove State Park in Carter County. The State Forester and the State Entomologist have been requested to have their organizations examine cultivated ribes for blister rust to the extent that their other duties will permit.

No white pine was planted in Kentucky during 1950 although they are growing some in their State nursery. Over 38,000 white pine, however were planted in 1947 and a lesser amount in 1948. We do not anticipate any serious blister rust control problem in the State at least not to the extent that any large appropriation of funds would be necessary. We believe that representatives of the State and the Federal Forest Service can take care of the situation with little or no outside help unless unknown conditions are present or develop.

Maryland

Over 136,000 wild ribes were destroyed on about 1,500 acres of land in Maryland during the year. All of this work was confined to the protection of pine owned by the State Department of Forests and Parks in Garrett County. While all of the work in Maryland comes under the cooperative program the lands owned by the Department of Forests and Parks are protected by funds which they appropriate. White pine in private ownership has been protected by emergency appropriations plus a few small allotments obtained through the State Plant Pathologist's office.

We have been able to provide reasonable control for the privately owned white pine in Allegany and Washington Counties where the rust hazard is low. Most of the privately owned white pine in Garrett County has been abandoned due to losses from cutting, suppression, blister rust and fire. The future requirements will, for the most part be light and will consist of examining established control areas doing a small amount of ribes eradication as the comeback of the bushes make it necessary.

An intensive reforestation program is being inaugurated in this State. During 1950 over one-quarter million white pine trees were planted and over one-half million are now growing in the nursery. Through close cooperation with the Department of Forests and Parks safeguards are set up to prevent white pine from being planted in association with wild ribes unless their eradication is practicable and funds are available for doing the work. A planting plan was prepared whereby the State Department of Forests and Parks can plant all of the white pine they will likely have available for several years in established control areas. Where other conditions are favorable intensive efforts are made to encourage the planting of white pine on both state and private ownership in those counties where wild ribes are very few in number or entirely absent.

North Carolina

Work in North Carolina during the year consisted of re-survey, post checking, and a small amount of ribes eradication. Most of the re-survey was confined to Madison County with eradication and post checking in Yancey and Mitchell Counties. The post checking this year, as well as in previous recent years, indicates a relatively light comeback. Where eradication is found necessary there are often fairly large numbers of bushes occurring on small scattered areas.

Considerable scouting for the rust was carried on during the fall of the year. With few exceptions the only infections found on ribes were in the immediate vicinity of infected white pine. Apparently weather conditions during the year were not favorable for the long-distance spread of the rust from infected pines to bushes. Some additional infections were found on white pine along a mountain range extending from Mt. Mitchell to Craggy Gardens. In this case the rust is following the expected pattern, namely, infection occurs on scattered individual or small groups of white pine growing at high elevations and in association with such heavy ribes concentrations that control work would not be practicable.

The white pine planting program is being rapidly increased. During the year nearly $2\frac{1}{2}$ million white pine trees were planted. Almost 2 million are growing in the state nursery and large numbers are being supplied by the TVA from their nursery in Tennessee.

The future requirements for maintaining control of the disease will be much the same as outlined in previous reports. This will consist of re-examining control areas and doing ribes eradication where found necessary. This will be required at intervals of about 8 to 10 years. Along with this, some resurvey will be necessary in order to keep up with the spread of white pine. Continued checking will be necessary to prevent white pine from being planted in association with heavy concentrations of wild ribes. During the year a detailed map was prepared showing the distribution of wild ribes and this information made available to County Agents and State and Federal Foresters.

Good progress has been made in assembling information regarding distribution and occurrence of wild ribes but this job is not yet complete.

South Carolina

No work was found necessary in South Carolina during the year and the situation, therefore, remains the same as indicated in the 1949 report.

Tennessee

Work was performed in Carter, Johnson and Sullivan Counties during 1950. The Sullivan County work was on National Forest lands and it was determined as a result of the check that no eradication work was necessary. In Carter and Johnson Counties 12,642 acres were checked and 8,602 ribes were pulled on 1,215 acres of private land. On the Cherokee National Forest 4,168 acres were checked. It was necessary to eradicate 180 ribes on 40 acres of this total. These ribes were removed from the control area of the Tiger Creek plantation in Carter County.

Definite progress is indicated when comparing work done on second and third workings. Only about one-tenth as many bushes were found on areas worked the third time as were found on those areas receiving their second eradication. Decreases of this magnitude in comeback of ribes are very encouraging.

Considerable time was spent in scouting for rust, particularly in the Cumberland Mountains where some rust had been found on ribes in 1948. No rust was found on either pine or ribes in Tennessee this year.

Some additional experimental work was done with the hormone type sprays. In September a combination of 2,4,5-T and 2,4-D in oil was sprayed on R. curvatum in Bledsoe County and R. missouriensis and R. glandulosum in Johnson County. Final checks of results in connection with this spray work will be made in the spring of 1951.

Virginia

During the year over 209,000 wild ribes were destroyed on nearly 29,000 acres of land with an expenditure of over 5,900 man-days. The work was performed on the Shenandoah National Park, the Blue Ridge Parkway, George Washington National Forest and privately owned lands in the vicinity of this National Forest. The work on the Blue Ridge Parkway was primarily for the protection of privately owned and National Forest lands adjacent to Park Service holdings. The work on the Shenandoah National Park was operated by that agency while the other work was handled by the Bureau.

As of the end of the year, the survey shows that there are 735,000 acres of white pine with a control area of over 1,900,000 acres. The re-survey is practically completed on all of the Federal holdings and for the most part on private holdings in the counties where mixed ownership occurs. Considerable survey remains to be done on some private holdings in the following counties: Botetourt, Roanoke, Montgomery, Page, Warren, Rappahannock, Madison, Green, Albemarle, Bedford, Floyd, Franklin, Carroll, Patrick and Henry. Due to the general absence of wild ribes there is no pressing need for re-survey in the last six counties listed above. All of the control acreage has been worked one

or more times on the Shenandoah National Park, Blue Ridge Parkway and the Jefferson National Forest. Nearly 5,000 unworked acres remain on the George Washington National Forest and at the present rate little if any of this will remain unworked at the end of the 1951 season. Almost 40,000 unworked acres remain in state and private ownership, but ribes are relatively light on perhaps half of it. At the present rate, several more years will be required to complete the initial work in the State.

The re-survey during the year showed continued increase of white pine much the same as indicated during recent years. There was considerable increase in public interest in forestry in general. The State Forest Service field men are doing a very effective job and this agency is cooperating very well with the National Forest and Park Services. Upwards of half a million white pine trees were planted in the State last year and we have had many inquiries regarding wild ribes population on proposed planting sites.

West Virginia

A sizeable reduction in operating funds, coupled with increased costs reduced accomplishments in the cooperative blister rust control program in West Virginia. This cutback delayed scheduled workings of large acreages, leaving them open to attack and because of postponement will make future workings more costly.

Every effort was made to put the maximum amount of funds into ribes eradication. Survey activities were halted and checking was performed only to the extent necessary to outline areas for eradication. Program activities were carried on in Hardy, Mercer, Pendleton, Pocahontas and Tucker Counties. Eradication was performed on 13,111 acres and 133,315 ribes were removed. During checking operations 30,853 acres were sampled.

Definite progress is evident on those areas where the third working has been completed on schedule. Generally speaking, only about one-tenth the number of ribes found on the initial working are being found on the third working.

The immediate need in West Virginia is for an expanded program on state and private lands whereby the second and third working of approximately 165,000 ribes-bearing acres could be completed in the next four or five years. New white pine plantations and expanding areas of natural reproduction continually add to the needs for an adequate control program.



PART III

REPORT OF BLISTER RUST CONTROL

ON

NATIONAL FORESTS

1950

REGION 7

Cumberland
George Washington
Jefferson
Monongahela

REGION 8

Chattahoochee
Cherokee
Nantahala
Pisgah
Sumter

NATIONAL FORESTS

Detailed statistics regarding the work on and by the National Forests are given in Tables 1 through 9 in the last section of this report.

REGION 7

Cumberland National Forest

No ribes eradication or survey work has been found necessary on this forest since 1947. The situation, therefore, remains the same as indicated in the annual report for that year. One of our field supervisors spent several days scouting for rust in eastern Kentucky which included most of the purchase area of this forest. No blister rust was found on either ribes or pine. One location of wild ribes was found near Carter Cove State Park in Carter County. This, together with earlier similar reports, indicated that wild ribes may be more widespread in the Cumberland Mountains than the present information indicates. If this is true, they likely occur in a scattered pattern and while they would represent a hazard it is believed to be relatively low.

George Washington National Forest

During the year white pine survey was conducted on over 100,000 acres of land within the purchase area. Over 138,000 wild ribes were removed on about 22,000 acres with an expenditure of over 4,100 man-days, by the George Washington project. In addition, about 66,000 ribes-free acres were examined and written off as initially worked. About 19,000 of these ribes-bearing acres were owned by the Forest. Most of the re-survey work was conducted on the James and Pedlar Ranger Districts. The re-survey is now completed for the entire forest except in that part of the Pedlar District lying in Amherst and Nelson Counties and this will be completed before the end of the fiscal year 1951. Thereafter, the only re-survey will be that found necessary as a result of such changes as are brought about by cutting, fire, planting or the natural spread of white pine.

Ribes eradication work was carried on in the Pedlar, James, Warm Springs, Deerfield, and Dry River Ranger Districts. There remained at the end of 1950 about 4,900 unworked control acres. We believe most of this, together with such additional acreage as found on the re-survey will be largely cleared of ribes by October 1951. There are between 50,000 and 75,000 control acres which will be in need of re-working within the next few years. Good progress can be made on this by the end of the fiscal year 1952 or perhaps 1953. We will then have a substantial percentage of the control area on maintenance and can probably maintain control with a considerably reduced program.

As of the end of 1950 our records showed 185,000 acres of white pine with a control area of 407,000 acres. When the survey is completed these figures will probably be slightly increased.

During the year considerable progress was made in arriving at a basis for determining the minimum amount of white pine that would justify the cost of protecting it from the blister rust. Several typical low-valued pine areas were examined in the field by Mr. Mattoon of the Forest Service Regional Office; Hanlon, Sundheimer and Curnutt of the George Washington, Jefferson and Monongahela, respectively, with representatives of the Bureau. This trip, together with the discussions, opinions, and conclusions went far toward helping us in making such determinations.

There was no marked change in the situation during the year with respect to the amount of rust found. More infection was found in the Pedlar Ranger District in the course of re-survey than we had anticipated. This infection, while widespread, is fortunately of low intensity. Work was performed on much of this district during the period 1935 - 1939. Survey to date indicates a fairly light comeback of bushes. Those which have survived are generally large but occur as scattered individuals or small patches. Detailed plans are being made to rework such areas as rapidly as possible during the early spring season by using as large a labor force as funds and available manpower will permit.

Jefferson National Forest

No work was carried on during the year except general scouting for the rust within the purchase area of the Forest. The situation, therefore, remains the same as shown in the 1948 annual report.

An examination should be made of representative ribes-bearing areas during the spring of 1951. Several of these control areas have not been worked for about five years. We suspect within the next few years some detailed checking and ribes eradication will be necessary.

Monongahela National Forest

Work on the Monongahela National Forest was conducted in Greenbrier, Pocahontas and Tucker Counties. This work was performed on areas that had two previous checks. Although 11,021 acres were checked it was necessary to remove bushes on only 2,719 acres of that area. There were 12,182 ribes pulled by eradication crews.

A good measure of control has been established on this forest and most of the third coverage will be completed by June 1952. With the exception of a few small areas most of the ribes-bearing acreages will not need attention for several years after the third working is completed.

REGION 8

Ribes eradication work was performed on three National Forests in the Region as follows: Chattahoochee 97 acres, Cherokee 40 acres, and Pisgah 173 acres. This work was found necessary as the result of making formal post checks or general examinations on about 5,000 acres. The eradication and checking work on the Chattahoochee National Forest was in the vicinity of Grassy Mountain. The work on the Cherokee was performed in Sullivan, Johnson, Coker and Monroe Counties. The Pisgah work was in Mitchell and Yancey Counties. Most of the work was performed by men employed primarily on State and privately owned lands and assigned for short periods to the Forest Service jobs when they were working in that vicinity.

Ribes averaged about eight to ten bushes per acre. Practically no bushes were found on most of the checked acreage from which they had been previously eradicated. The comeback of these bushes after previous eradications was for the most part on relatively small areas where conditions were very favorable for their growth. In such situations they were usually found in fairly heavy concentrations.

The ribes-bearing control acreage on National Forests in this Region occur in such widely scattered areas that it is more economical to examine and work a small area each year in conjunction with similar work on privately owned lands in the same county rather than attempt to do large acreages scattered over most of the forest. This makes it highly desirable that small appropriations be made every or nearly every year and the work handled in this manner. An effort is now being made to set up the control work in the States of Tennessee, North Carolina and Georgia on a rotation whereby up to five counties will be covered each year. We plan on re-examining these problem areas at intervals of about ten years.

During the 1957 season we plan on checking and eradication if necessary in the vicinity of White Water Falls, and the Nantahala River on the Nantahala National Forest; Lost Cove on the Pisgah and Watauga Lake on the Cherokee. If time and funds permit, some scouting and other work as found necessary will be done in the northwest parts of McDowell and Burke Counties on the Pisgah.

PART IV

REPORT OF BLISTER RUST CONTROL

ON

NATIONAL PARKS

1950

Blue Ridge Parkway
Shenandoah National Park
Great Smoky Mountains National Park

NATIONAL PARKS

Blue Ridge Parkway

As of the end of 1950, Blue Ridge Parkway reports 5,773 acres of white pine with a control area of 13,890 acres. All of this control area except 2,284 acres is on maintenance. Except for a small amount of work which is scheduled for next spring on the Cone Park in North Carolina, the control work is practically current with the Parkway construction.

During the year a survey was made of the present white pine, including 1950 plantations, on the Cone and Price Parks near Blowing Rock, North Carolina. A control area was established which includes valuable planted and some native white pine. Ribes eradication work was completed on about one-half of this newly established control area. Most of this had been worked twice before the land was acquired by the Park Service.

Ribes eradication work was conducted on over 700 acres of Parkway lands between Route U.S. 60 and Tye River Gap, in the vicinity of Buena Vista, Virginia. This did not affect the Parkway control problem to any great extent since the work was performed by the Forest Service and cooperative projects for the protection of white pine on lands adjacent to the Parkway.

Blister rust control work proposed for completion during 1951 on the Blue Ridge Parkway includes the following:

1. Complete ribes eradication on the Cone Park.
2. Post check the 1950 work area on the Price Park and re-eradication if found necessary.
3. Make an examination of the white pine along the recently graded part of the Parkway beginning at Route U.S. 70 near Asheville, and continuing northward as far as valuable white pine is found. This work should be done as soon as practicable after the grading is completed.
4. Continued scouting for blister rust and checking for cultivated ribes if time permits.
5. A study should be made of the white pine values along the Parkway north of the James River in Virginia as shown by the Forest Service survey, since the Park Service may find it desirable to include some of this in their control area.

Some infection was found on ribes in the vicinity of Grandmother Mountain and in the Mt. Mitchell-Craggy area. The density and distribution of the infection on Grandmother Mountain strongly indicates the presence of some nearby infected white pine, but to date none has been found. The pine infections in the Mt. Mitchell-Craggy country still indicates, for the most part, light infection on scattered individual white pine trees.

Shenandoah National Park

As of the end of the year, Shenandoah National Park reports 37 pine areas having 3,080 acres of white pine with a control area of 14,270 acres. Of this, 12,560 or 88 percent was on maintenance. During the year a careful study was made of several areas by representatives of the Park Service and the Bureau, at which time 7 areas with 2,503 control acres were dropped from the control problem. The reasons for dropping the areas were one or more of the following: (1) lack of white pine reproduction, (2) suppression of the white pine by other species, (3) suppression of white pine due to severe attacks of white pine weevil and (4) low pine density.

The ribes per acre found on eradication was a slight increase as compared to 1949 work. This is a normal variation between different areas of the Park rather than any increase in the ribes population for the Park as a whole.

During 1950 over 22,000 wild ribes were destroyed on 1,632 acres. In addition, 790 acres of ribes-free land was included in the control area as initially worked. This represents an increase in the total acres worked over last year, but the acres covered per man-day remain about the same and, as stated, the ribes per acre were more. As noted elsewhere in the Region, blister rust infection on ribes was probably a little lighter than usual. This is of no major significance with regard to the spread of the rust since it is generally distributed throughout ribes-bearing sections of the Park as well as in similar situations in the nearby mountains. Excellent progress was made in post checking and a small amount of resurvey work was carried on where it was felt that the changing pine situation required such work. The filing and record system was considerably improved and simplified without sacrificing any essential data. A large labor load was carried and very effective work accomplished on eradication during the early spring season.

The tests started in 1949, using 2,4,5-T for killing ribes, were completed. They indicate that while this chemical does kill a large percentage of the bushes it would not be efficient as hand eradication under most conditions in the Park, nor would it be desirable for use in the Park's present control area. All of these areas have been worked one or more times and the ribes population has been reduced to a point where the bushes occur in small patches or as scattered individuals. The bushes are usually small, shallow rooted, and can be pulled in less time than would be required to apply any spray now available.

Shenandoah's blister rust control work program for 1951 includes the following:

1. As a result of post checks during the season, 290 acres are scheduled for re-eradication and 212 acres will need additional checking and possibly eradication work.
2. Re-examination of the long-range work schedule.
3. Maintenance of files and records.
4. Set permanent grid corners and reference stakes.

Great Smoky Mountains National Park

As of the end of 1950 Great Smoky Mountains National Park reports 67,905 acres of white pine with a control area of 110,904 acres in the Park. This represents a change in last year's acreage figures as reported due to correction of errors in previous reports rather than any actual change in conditions on the ground. All of the control area has been worked at least once and most of the ribes-bearing areas have received two or more workings. Of the control area, 94% is reported on maintenance. There are 6,049 acres now shown as requiring additional work, but it is believed that the ribes regeneration on much of this will be light and that another post check will place most or all of it on maintenance.

Resurvey work is scheduled for an estimated 25,000 acres of the tract of land north of Fontana Lake which was recently acquired by the Park Service. This survey will probably increase considerably the amount of white pine acreage in the Park. The extent to which ribes eradication work will be necessary on this land cannot be estimated until the survey is completed.

No ribes eradication work was found necessary during 1950. The work during the year included post checking and establishing or replacing permanent grid corners and reference markers. Some time was also spent in scouting for blister rust.

The major job during 1951 will be resurvey in the Park near Fontana Lake. This work will begin at the end of the spring fire season, or about June 1, and will continue to the beginning of the fall fire season.

Consideration should be given to the possibility of employing one checker on a year-round basis to supervise the blister rust control work on the three National Parks in this Region. Such plans could be placed into effect perhaps in 1952.

T A B L E S

TABLE I
SUMMARY OF RESURVEY WORK IN THE REGION DURING 1950

State	Acres White Pine Surveyed	Acres White Pine Retained In Control Area	Control Area Covered On Survey	Man-Days Expended	Acres Covered Per Man-Day
Maryland	43	43	180	Super.	-
North Carolina	38,104	37,421	73,170	929	79
Virginia	36,450	36,194	114,984	1,033	111
TOTAL	74,597	73,658	188,334	1,962	96

TABLE 2

SUMMARY OF RIBES ERADICATION BY STATES - 1950

State	Acres Worked			Ribes Destroyed	Man-Days on Eradication	Acres ^{At} Worked Per Man ^{At} Day	Ribes Pulled Per Acre
	First ^{At} Working	Second Working	Other Working				
Georgia	-	-	148	1,731	5	3.0	2
Maryland	180	-	1,336	136,290	337	4.5	20
North Carolina	196	50	109	3,136	69	4.3	1
Tennessee	-	300	955	8,732	175	7.2	6
Virginia	88,929	7,448	6,758	209,328	5,935	4.8	7
West Virginia	-	5,259	7,852	133,315	1,862	7.0	10
TOTAL	89,305	13,057	17,158	492,532	8,384	5.4	11

^{At} Includes 74,266 acres on which no ribes were found.

^{At} Ribes bearing acres only.

TABLE 3

SUMMARY OF CHECKING WORK BY STATES - 1950

State	Post Checking *			Regular Checking**			Total		
	Strip Acres	Acres Covered	Man-Days	Strip Acres	Acres Covered	Man-Days	Strip Acres	Acres Covered	Man-Days
Georgia	6.8	136	2	-	-	-	6.8	136	2
North Carolina	264.6	4,833	300	-	-	-	264.6	4,833	300
Tennessee	510.2	16,390	236	21.0	420	9	531.2	16,810	245
Virginia	939.0	18,887	425	1237.0	24,752	309	2176.0	43,639	734
West Virginia	927.9	24,865	291	299.3	5,987	72	1227.2	30,852	363
TOTAL	2648.5	65,111	1,254	1557.3	31,159	390	4205.8	96,270	1,644

* Sampling the areas for ribes some years following the last working to determine the need for re-working.

** Sampling the areas for ribes following work performed during current year or late previous season to determine the proficiency of the crews.

TABLE 4

SUMMARY OF EXPENDITURES FOR BLISTER RUST CONTROL WORK - 1950

BY STATES AND SOURCE OF FUNDS

State	Federal Funds				Cooperative Funds			Total All Funds	
	Entomology and Plant Quarantine		Forest Service	Park Service	Total Federal Funds	Direct Aid	Indirect Aid		Total Dr. & Ind. Aid
	Adm.	Coop.							
Georgia	\$ 48	\$ -	\$ 72	\$ -	\$ 120	\$ 26	\$ -	\$ 26	\$ 146
Maryland	1,137	984	-	-	2,121	749	250	999	3,120
North Carolina	4,566	3,339	1,324	7,043	16,272	5,678	600	6,278	22,550
Tennessee	1,007	1,768	519	2,184	5,478	1,355	120	1,475	6,953
Virginia	27,807	3,973	49,522	12,823	94,125	6,271	350	6,621	100,746
West Virginia	12,049	2,677	13,135	-	27,861	2,557	100	2,657	30,518
TOTAL	\$ 46,614	\$ 12,741	\$ 64,572	\$ 22,050	\$ 145,997	\$ 16,636	\$ 1,420	\$ 18,056	\$ 164,033

TABLE 5

SUMMARY OF RIBES ERADICATION WORK - 1950

BY PROJECTS

Project	First Working			Second Working		
	Acres*	Ribes	Man-Days	Acres	Ribes	Man-Days
Geo. Wash. Nat. For.	71,939	24,878	998	7,075	49,573	1,446
Monongahela Nat. For.	-	-	-	-	-	-
Sub-Total Reg. 7	71,939	24,878	998	7,075	49,573	1,446
Chattahoochee N.F.	-	-	-	-	-	-
Cherokee Nat. For.	-	-	-	-	-	-
Sub-Total Reg. 8	-	-	-	-	-	-
Sub-Total Forests	71,939	24,878	998	7,075	49,573	1,446
Shenandoah Nat. Pk.	790	-	-	319	2,415	161
Blue Ridge Pk'way.	78	46	2	-	-	-
Sub-Total Parks	868	46	2	319	2,415	161
TOTAL - FEDERAL	72,807	24,924	1,000	7,394	51,988	1,607
Georgia	-	-	-	-	-	-
Maryland	180	16,000	35	-	-	-
North Carolina	118	1,392	31	50	601	13
Tennessee	-	-	-	300	6,201	81
Virginia	16,200	65,132	1,482	403	6,033	102
West Virginia	-	-	-	4,910	90,670	765
Sub-Total Coop.	16,498	82,524	1,548	5,663	103,505	961
TOTAL - REGION	89,305	107,448	2,548	13,057	155,493	2,568

* Includes 74,366 acres ribes-free.

Table 5

Continued

SUMMARY OF RIBES ERADICATION WORK - 1950

BY PROJECTS

Other Workings			All Workings			Per Acre ^{At}		Maximum
Acres	Ribes	Man-Days	Acres	Ribes	Man-Days	Ribes	Man-Days	Seasonal Employ- ees
9,111	64,282	1,675	88,125	138,733	4,119	6	.19	102
2,719	12,182	337	2,719	12,182	337	4	.12	6
11,830	76,464	2,012	90,844	150,915	4,456	6	.18	108
97	946	3	97	946	3	10	.03	7
40	130	12	40	130	12	3	.30	7
137	1,076	15	137	1,076	15	8	.11	8
11,967	77,540	2,027	90,981	151,991	4,471	6	.18	116
1,313	20,410	605	2,422	22,825	766	14	.45	21
104	1,053	22	.182	1,099	24	9	.20	11 (3)
1,417	21,463	627	2,604	23,924	790	14	.45	32
13,384	99,003	2,654	93,585	175,915	5,261	7	.20	148
51	785	2	51	785	2	15	.04	1
1,336	120,290	302	1,516	136,290	337	90	.22	16
5	44	1	173	2,037	45	12	.26	13
915	2,401	82	1,215	8,602	163	71	.13	8
217	3,967	70	16,820	75,132	1,654	8	.18	25
1,250	3,101	157	6,160	93,771	922	15	.15	20
3,774	130,588	614	25,935	316,617	3,123	17	.17	83
17,158	229,591	3,268	119,520	492,532	8,384	11	.19	231

At Based on ribes-bearing acres only.

(3) The G.S.M. Nat. Park employed five men on other work which are included in this figure.

TABLE 6

SUMMARY OF ACRES WORKED ON RIBES ERADICATION - 1950

BY OWNERSHIP

OWNERSHIP	A C R E S			
	First Working	Second Working	Other Working	Total Workings
George Washington National Forest	37,388	5,822	6,035	49,245
Monongahela National Forest	-	-	1,922	1,922
Sub-Total, Region 7	37,388	5,822	7,957	51,167
Chattahoochee National Forest	-	-	97	97
Cherokee National Forest	-	-	40	40
Pisgah National Forest	118	50	5	173
Sub-Total, Region 8	118	50	142	310
SUB-TOTAL - FOREST SERVICE	37,506	5,872	8,099	51,477
Shenandoah National Park	790	319	1,313	2,422
Blue Ridge Parkway	799	-	104	903
SUB-TOTAL - PARK SERVICE	1,589	319	1,417	3,325
TOTAL - FEDERAL	39,095	6,191	9,516	54,802
Georgia	-	-	51	51
Maryland	180	-	1,336	1,516
Tennessee	-	300	915	1,215
Virginia	50,030	1,617	1,348	52,995
West Virginia	-	4,949	3,992	8,941
TOTAL - STATE & PRIVATE	50,210	6,866	7,642	64,718
REGIONAL TOTALS	89,305	13,057	17,158	119,520

TABLE 7

SUMMARY OF RIBES ERADICATION WORK - 1918-1950

BY PROJECTS

Project	First Working			Subsequent Working			ALL WORKINGS		
	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days
Geo. Wash. Nat. Forest	538,637	1,278,575	15,942	85,781	1,675,347	23,858	624,418	2,953,922	39,800
Jefferson Nat. Forest	302,262	128,343	337	3,156	193,358	1,494	305,418	327,701	1,831
Monongahela Nat. For.	29,090	225,331	2,240	18,096	106,107	3,484	47,186	331,438	5,724
Cumberland Nat. For.	38,730	13	328	65	36	8	38,795	49	336
Sub-Total, Region 7	908,719	1,632,262	18,847	107,098	1,980,848	28,844	1,015,817	3,613,110	47,691
Pisgah Nat. Forest	50,937	52,087	1,014	1,907	11,509	307	52,844	63,596	1,321
Nantahala Nat. Forest	20,434	"	45	"	"	"	20,434	"	45
Cherokee Nat. Forest	541,393	1,966,590	11,138	24,588	30,547	673	565,981	1,997,137	11,811
Sumter Nat. Forest	48,561	"	382	"	"	"	48,561	"	382
Chattahoochee	233,116	1	2,523	391	12,436	411	233,507	12,437	2,934
Sub-Total, Region 8	894,441	2,018,678	15,102	26,886	54,492	1,591	921,327	2,073,170	16,493
SUB-TOTAL FOR. SERV.	1,803,160	3,650,940	33,949	133,984	2,035,340	30,235	1,937,144	5,686,280	64,184
Shenandoah Nat. Park	19,392	1,254,387	11,861	17,242	637,866	10,256	36,634	1,892,253	22,117
Blue Ridge Parkway	10,719	18,309	469	960	4,690	214	11,679	22,939	683
Gr. Smoky M. Nat. Park	28,285	95,254	1,421	738	5,306	312	29,023	100,560	1,733
SUB-TOTAL PARK SERVICE	58,396	1,367,950	13,751	18,940	647,862	10,782	77,336	2,015,812	24,533
TOTAL - FEDERAL	1,861,556	5,018,890	47,700	152,924	2,683,202	41,017	2,014,480	7,702,092	88,717

TABLE 7. (Continued)

Project	First Working			Subsequent Working			ALL WORKINGS		
	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days	Acres	Ribes Destroyed	Man-Days
Delaware	6,186	6,889	268	-	-	-	6,186	6,889	268
Georgia	444,111	2,736,578	8,571	2,884	248,303	1,150	446,995	2,984,881	9,721
Kentucky	122,156	4,098	1,164	65	931	19	122,221	5,029	1,183
Maryland	176,488	3,195,04	12,957	66,531	895,471	9,930	243,019	4,090,865	22,887
North Carolina	1,620,500	2,294,935	42,324	10,414	353,014	11,961	1,630,914	2,647,949	54,285
South Carolina	82,309	7,487	1,845	-	-	-	82,309	7,487	1,845
Tennessee	1,150,485	3,935,328	30,577	62,625	476,298	6,451	1,213,110	4,411,626	37,028
Virginia	1,089,331	6,064,444	60,027	51,738	1,459,525	19,974	1,141,069	7,523,969	80,001
West Virginia	809,634	5,640,446	42,294	107,418	1,076,183	16,695	917,052	6,716,629	58,989
TOTAL COOPERATIVE	5,501,200	23,885,599	200,027	301,675	4,509,725	66,180	5,802,875	28,395,324	266,207
TOTAL - REGION	7,362,756	28,904,489	247,727	454,599	7,192,927	107,197	7,817,355	36,097,416	354,924

TABLE 8

STATUS OF BLISTER RUST CONTROL WORK AS OF DECEMBER 31, 1950

BY OWNERSHIP

Ownership	Total Acres		Acres Worked			Acres Not Worked	On Maintenance	
	White Pine	Control	First Working	Second Working	Other Working		Acres	Per-cent
George Washington N.F.	185,328	407,921	402,967	62,477	32,530	4,954	335,295	82
Jefferson N.F.	55,084	107,474	107,474	3,737	856	=	102,869	96
Monongahela N.F.	46,854	89,559	89,559	11,606	2,484	=	82,541	92
Cumberland N.F.	16,980	32,002	32,002	65	65	=	32,002	100
Sub-Total, Region 7	304,246	636,956	632,002	77,885	35,915	4,954	552,707	87
Pisgah N.F.	79,819	154,764	154,754	2,918	1,690	10	150,479	97
Hamahala N.F.	42,033	63,144	62,709	=	=	435	62,702	99
Cherokee N.F.	250,378	484,572	484,572	2,103	41	=	481,266	99
Suwannee N.F.	18,794	53,862	53,862	3,700	=	=	53,862	100
Chattahoochee	295,902	349,903	349,903	330	97	=	349,713	99
Sub-Total, Region 8	686,976	1,105,245	1,105,800	9,051	1,828	445	1,098,022	99
SUB-TOTAL, FOREST SER.	991,222	1,743,201	1,737,802	86,936	37,743	5,399	1,650,729	94
Shenandoah Nat. Park	3,080	14,270	14,270	5,012	3,793	=	12,560	88
Blue Ridge Parkway	5,775	13,890	13,890	2,087	104	=	11,803	83
Great Smoky M.Nat. Park	67,905	110,904	110,904	413	360	=	104,855	94
SUB-TOTAL, PARK SERVICE	76,758	139,064	139,064	7,512	4,257	=	129,021	93
Cherokee Indian Res.	22	445	445	=	=	=	445	100
SUB-TOTAL, INTERIOR	76,780	139,509	139,509	7,512	4,257	=	129,466	93
TOTAL - FEDERAL	1,068,002	1,982,710	1,877,311	94,448	42,000	5,399	1,780,135	95

TABLE 8 (Continued)

Ownership	Total Acres		Acres Worked			Acres Not Worked	On Maintenance	
	White Pine	Control	First Working	Second Working	Other Working		Acres	Per Cent
Delaware	242	6,186	6,186	-	-	-	6,186	100
Georgia	248,576	324,922	324,452	678	441	470	324,302	99
Kentucky	31,199	114,812	114,812	-	-	-	114,312	100
Maryland	70,716	164,525	164,525	15,696	27,194	-	152,818	92
North Carolina	592,268	1,364,194	1,362,948	6,631	2,216	1,246	1,360,369	99
South Carolina	45,398	77,008	77,008	25,935	-	-	77,008	100
Tennessee	464,530	1,075,546	1,075,364	15,827	3,447	182	1,055,988	98
Virginia	521,483	1,462,860	1,422,966	29,383	7,970	39,894	1,373,100	93
West Virginia	262,966	707,620	707,045	108,256	10,996	575	541,849	78
SUB-TOTAL STATE & FWP.	2,237,378	5,297,173	5,254,806	202,406	52,324	42,367	5,005,932	94
TOTAL REGION	3,305,380	7,179,883	7,132,117	296,854	94,324	47,766	6,786,127	94

TABLE 9

STATUS OF RIBES ERADICATION BY STATES 1932-1950

ALL OWNERSHIPS

State	Total Acres		Acres Worked			Ribes Destroyed	Man-Days	Acres On Main-tenances	Un-worked Acres
	White Pine	Control	First Working	Second Working	Other Working				
Delaware	242	6,186	6,186	-	-	6,889	268	6,186	-
Georgia	544,478	674,825	674,355	1,008	538	2,997,318	12,655	674,015	470
Kentucky	48,179	146,314	146,314	65	65	5,078	1,519	146,314	-
Maryland	70,716	164,525	164,525	15,696	27,194	4,090,865	22,887	152,818	-
North Carolina	751,441	1,621,263	1,619,572	11,193	4,430	2,813,190	57,014	1,605,414	1,691
South Carolina	64,192	130,870	130,870	29,635	-	7,487	2,227	130,870	-
Tennessee	770,707	1,643,615	1,643,433	17,930	3,488	6,409,338	49,242	1,620,751	182
Virginia	734,826	1,942,363	1,897,515	92,270	40,105	12,157,960	136,316	1,777,889	44,848
West Virginia	340,599	849,922	849,347	129,057	18,504	7,609,291	72,796	671,870	575
TOTAL - REGION	3,305,380	7,179,883	7,132,117	296,854	94,324	36,097,416	354,924	6,786,127	47,766



WHITE PINE BLISTER RUST CONTROL

NORTHEASTERN REGION

ANNUAL REPORT - 1950

WHITE PINE BLISTER RUST CONTROL IN NORTHEASTERN REGION

ANNUAL REPORT FOR 1950

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine
Division of Plant Disease Control
20 Sanderson Street
Greenfield, Massachusetts

FOREWORD

This report relates to activities during the calendar year 1950 in the control of the white pine blister rust disease in the Northeastern Region comprising the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania. Administratively, the project is operated cooperatively by the Division of Plant Disease Control, Bureau of Entomology and Plant Quarantine, Agricultural Research Administration of the United States Department of Agriculture and the official department or agency in each state having statutory responsibility for the control of forest pests. As of January 1, the problem involved the effective suppression of ribes on a net control area of 11,362,554 acres for the protection of the white pine on 4,057,658 acres of land.

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PART I

GENERAL STATEMENT

Importance of White Pine

The four million acres of white pine in the net control area represents nearly one-third of the total commercial pine acreage in the nation. During the last decade the cut of white pine in the region was over 40% of the total in the country. In the absence of adequate official statistics, a recent estimate made by the regional office placed the volume of mature pine at over 11 1/3 billion bd. ft. valued at 154 million dollars. In addition, the immature pine growth has a potential volume of 39 billion board feet worth over 521 million dollars. There is a wide variety of use for white pine, but production of building lumber, boxes and crates leads. It is used also for millwork, knotty pine paneling, coffins, reels, boats, woodenware and novelties. It finds widespread utilization in foundry patterns, shade-rollers, drawing boards, matches and a large variety of specialty products such as toys, dowels, furniture, wood flour and pressed board. This use for such a variety of purposes is the basis for figures recently released by the Federal Reserve Bank of Boston which show that in the New England states alone "the cutting and marketing of various forms of white pine wood add nearly 80 million dollars" to the annual income of these states. The statistics on lumber production in the region clearly indicate the real value of the pines. For example, the Bureau of Census figures for the eight-year period from 1940-47 inclusive, show an average annual production of white pine lumber in New England of about 621 million bd. ft. Figured at a recently prevailing quotation of \$35 per M bd. ft. for even low grade round-edge white pine lumber, we have the impressive figure of \$21,735,000 for this one item of unfinished lumber. This would be materially increased if it were readily possible to segregate total production by grade and price.

These indications of substantial production demonstrate the suitability of the lands in the region for the growing of white pine. Until recently the forests have been producing essentially without the benefit of scientific management. Within the last few years, however, there has been satisfying evidence of an increased interest in the application of such management to the forest lands in the region. Such agencies as the New England Forestry Foundation, Connwood, Inc., American Forest Products Industries, Inc. and others, together with the State Extension Foresters, the State District Foresters and the Farm Foresters are gradually convincing land owners of the wisdom of better management of their forest properties including protection against fire, insects and such diseases as white pine blister rust. The advent of the new forest taxation law in New Hampshire, with its provision for a 30% reduction in tax if the crop harvesting is done in accordance with good forest practice rules, gives promise for a greater interest in all round forest management. New York and Connecticut are preparing manuals on the subject and the Federal Reserve Bank of Boston sponsored the publication of a booklet ("Wooden Dollars") which points the way to increased income through better practices. In New York more than 3 1/2 million acres of privately owned forest land has been signed up under the Forest Practice Act. While the evidence of management practices is still spotty in the field, the trend is clear.

The contrary aspect of the forest situation relates to the cutting of much stumpage that is immature, under the stimulus of heavy demand and high prices. Observers report truckloads of logs less than six inches in diameter despite the fact that mill studies have disclosed that the logging and milling of immature growth is not a paying proposition. Personnel in Maine in particular are much concerned about the reckless slaughter of smaller and smaller trees. Pulp mills are competing for pine bolts and hauling long distances to secure their raw material.

In addition to the importance of the production of lumber, white pine ranks high as a forest cover for the protection of the purity and continued supply of water. The planting of white pine on municipal watersheds throughout the region attests to this fact. The tremendous importance of white pine for its aesthetic value to the very large recreational business in the region is evidenced in the many stands of pine around youth camps, summer and winter resorts and recreational centers in countless numbers. All these values demonstrate the importance of white pine in the region and the necessity for its continued protection and more intelligent management. With protection and management, maximum returns will be assured and a timber shortage in the years ahead may be avoided.

Pine Infection

At the present stage of the control program, we are concerned particularly about the status of infection in the younger age classes of pine, especially reproduction that has developed during the past 10-12 years, either on areas adjacent to older stands or on logged, burned or hurricane-disturbed sites. Since November 1947, a spot infection survey has been in progress to determine conditions in such stands. As of July 1, 1950 data had been taken from 4,108 sample plots in the 1½ ft. to 10 ft. height class. Infection averaged 4.5% of the 287,015 pines examined. While insufficient data have been obtained to date, there are indications that damaging infection in this class of stock is present on about 23% of the areas sampled.

Evidence of heavy damage in older stands exists throughout the region, but during the past decade, lumbering has removed from the scene many of the stands where the disease was killing the tops and entire trees. However, examples of heavy damage are still present. During the year, pine infection as high as 50-60 % on reproduction and pole stands was found in several areas in Washington County, New York where it has not been possible to keep control activities up to schedule. A similar condition exists in a 35 acre stand at Gilboa. In a 10-year old plantation on the Port Jervis Watershed, 56% of the remaining pines are infected and blister rust may be partly responsible for the fact that 50% of the planted trees are now missing. Studies completed this year by Dr. Rusden on the Waterford, Vermont infection area show that by 1945, 73.4% of the crop trees in the area had been killed or were sure to die from blister rust. Had the trees not been killed there would have been an addition of 47.5% to the final crop volume through the increment item alone. Damage in the entire region over the past thirty years has been calculated as nearly 6 3/4 billion bd. ft. with a stumpage value of 53 3/4 million dollars and a lumber value of over 180 million dollars.

Accomplishments to Date in the Control Program

At the end of 1950 the control of the disease had been temporarily established on 48.6% of the control acreage in the region. This accomplishment is represented in the figure of 5,425,226 acres currently in the maintenance classification.

The attainment of this status has involved the uprooting of 309,748,350 wild and cultivated ribes in first, second or other workings since 1918 on a gross area of 22,856,322 acres. Table 1 shows the status of control by land ownership classes. Details by states are in Tables 35 and 36 in the Appendix.

Table 1 - Status of Ribes Eradication Work 1950

Land Ownership Class	Acreage of Control Area	Acreage Worked			Acreage on Maintenance	Percentage of Control area			
						Worked			On Maintenance
		Once	Twice	Other		Once	Twice	Other	
State & Private	11,134,709	10,607,027	6,490,893	2,227,296	5,402,304	95.3	58.3	20.0	48.5
National Forest	9,108	8,573	6,387	3,932	6,050	94.1	70.1	43.2	66.4
National Park	16,872	16,872	16,872	8,207	16,872	100.0	100.0	48.6	100.0
Totals	11,160,689	10,632,472	6,514,152	2,239,435	5,425,226	95.3	58.4	20.0	48.6

As a requisite to the effective conduct of this ribes eradication work, detailed mapping has been performed on 8,811,485 acres, representing 79% of the 11,160,689 acres of net control area in the region.

Special work contributing to the control status has included the protection of stock in 28 white pine-producing Federal, State and commercial nurseries. From 1930 to date, this sub-project has entailed the eradication of 494,029 wild and cultivated ribes. The campaign to completely eliminate the especially susceptible European Black Currant required the inspection of 1,705,433 properties and the removal therefrom of 103,376 plants in 46,397 patches. A special blister rust canker elimination project during the period 1932-50 resulted in the destruction of 286,799 fatally-infected pines and the treatment of an additional 394,112 pines by the removal of 944,889 cankers.

It is incumbent upon those engaged in publicly-sponsored activities to keep the "stockholders" fully informed of the progress of project activities. To this end, the personnel in the region have addressed 10,873 meetings, attended by 605,674 individuals. The press has been furnished 12,551 informative items and 6,688 displays have been placed in store windows, at agricultural fairs or other places of public assembly. Motion picture films, prepared especially to portray the essential features of the disease and methods of control, have been used for many years with recent emphasis on use in connection with the visual education programs in Junior and Senior High Schools. Special courses of instruction have in recent years been arranged at the several forestry schools in the region. Information has also been disseminated by means of the radio and more recently via television.

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All of the above adds up to the effective protection of the white pine resources, as an important item in the general economy of the region.

The Problem Ahead

Lest the foregoing statement of accomplishments be construed as indicative of complacent satisfaction, it must be stated at this point that while much success has been attained, much remains to be done. The first requirement is to perform initial control work on 528,217 acres. An examination of 5,207,246 acres, initially worked five or more years ago, is also essential to determine existing pine and ribes conditions and to re-work those areas where a regrowth of ribes is endangering the pines. In addition, re-examination work must be performed on those areas in the maintenance category that have been so classified for ten years. To insure the most efficient performance of this total work load, it will be necessary to complete detailed mapping and to record on maps the important changes that have occurred in the re-work area. The continued protection of the stock in the white pine producing nurseries also will require attention.

No one can deny that activities to date have been effective in the control of the disease and yet the problem ahead is still challenging. A review of the studies by Dr. Rusden on ribes and pine regeneration in the 1938 hurricane areas indicates that about 36% of the study plots regenerated to ribes. By the end of 1949 the average pine infection for plots with ribes is 15.6%, but the range is from a trace to 50%. The point is emphasized that whereas the blister rust control situation in the region is bright, there will remain for some time to come "hot spots" where continued vigilance will be required. This point is also indicated in the spot infection survey. In the 1950 progress report, Dr. Rusden pointed out that infection of young pine prevails in about 20% of the total pine area sampled. Applying this figure to the four million acres of white pine in the region, the bulk of the ultimate work would be on something like 800,000 acres and adjacent acreage in the protection zones. The problem thus reduced to figures seems simple enough but it is complicated by the fact that these 800,000 acres are scattered all over the region and intermingled with the other 80% in a patch-work pattern.

With the rework load currently prevailing, it is apparent that the present program must be stepped up in some way. The major need seems to be for increased funds with which to employ a limited number of full-time trained scouts in each district. The leaders have been indicating repeatedly that they could accomplish a great deal more with a few trained men under promise of steady employment, rather than to be forced to use sub-standard labor on a temporary basis. The need for stepping up the program can be accomplished apparently only through the availability of more adequate federal allotments to match the cooperative funds where such matching has not been possible with current appropriations.

Methods Development

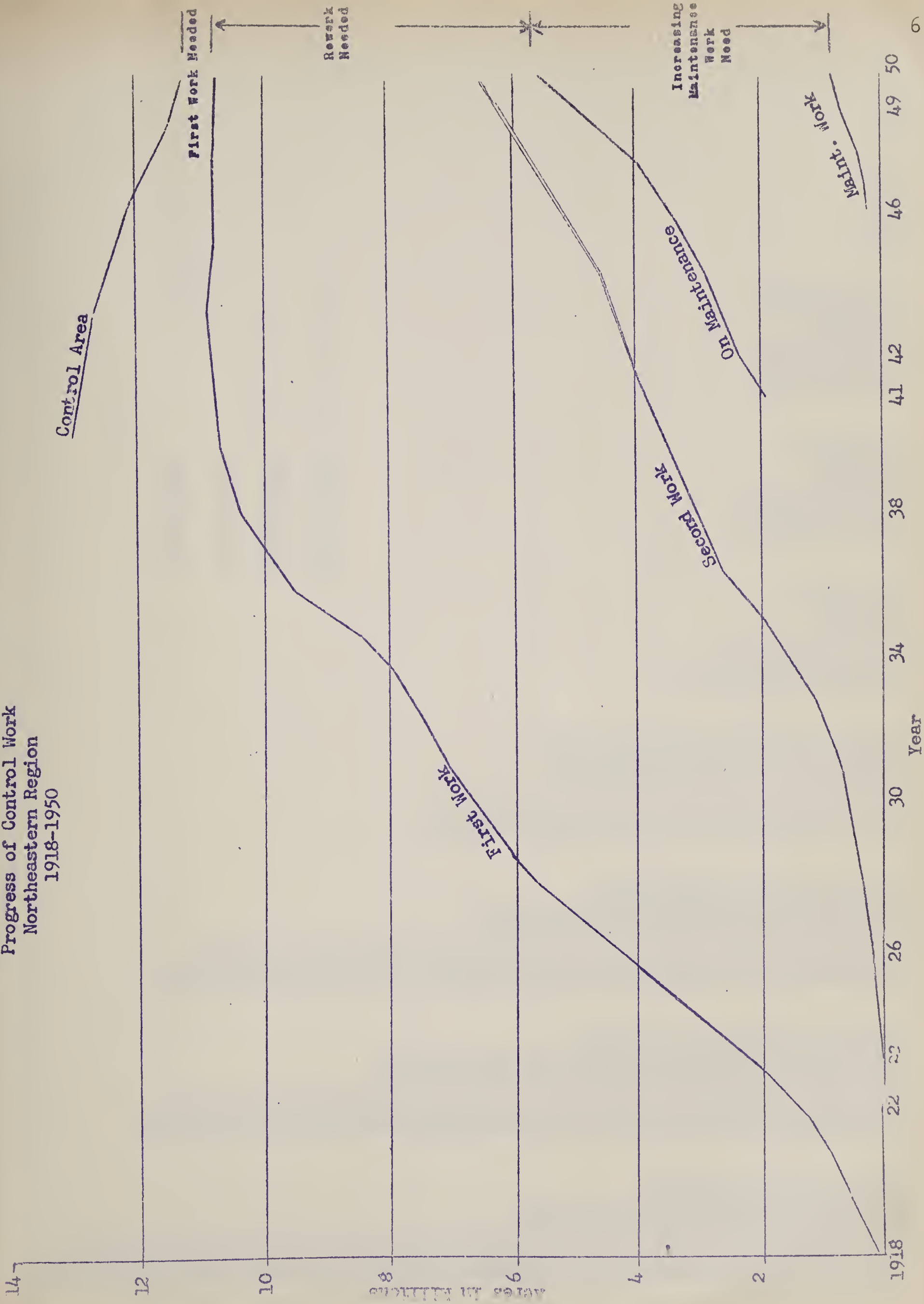
Constant thought has been given to the reduction of costs of ribes eradication. Among the notable accomplishments has been the general reduction in the size of eradication crew units, the reduction of protection zone widths in connection with re-mapping, and the use of the drag-line in marking work strips. This latter method was outlined in detail in the 1949 annual report (Page 11). During the 1950 season, plastic-covered wire was in use to compare it with venetian-blind cord. The use of two, hundred foot length lines appear best suited under most conditions. There is general agreement that the drag-line method has definite application in the region, but it is not felt that it will entirely replace the crew formation procedure. There is unanimity of opinion that judgment must be exercised in determining where the method should be practiced. Much time can be wasted with its use where ribes are not numerous. The best results are obtained by men who have had no experience with the crew-formation method. Eventually, the maximum use will be by scouts or scout crews to eradicate concentrations of ribes in relatively small areas.

Salt and borax was in continued use in all states for the eradication of bushes in sites where uprooting by hand is expensive and not wholly effective. During the year, 2, 4, 5-T was used in all states except Rhode Island and Connecticut on a continuing experimental basis. The most extensive activities were in New York where 8 native ribes species growing in concentrations and 3 commonly cultivated species at abandoned house-sites were treated. This involved 67 separated areas. To secure information on the possible effect of the chemical on white pines, 50 small pines on the Pack Forest were sprayed. In all, 1,499 gallons of solution at the rate of $3/4$ of a gallon to 100 gallons of water were applied to 40.6 acres in the treatment of an estimated 87,000 ribes. The results of spraying appear encouraging, but the effectiveness of the chemical in killing ribes cannot be determined accurately until next spring.

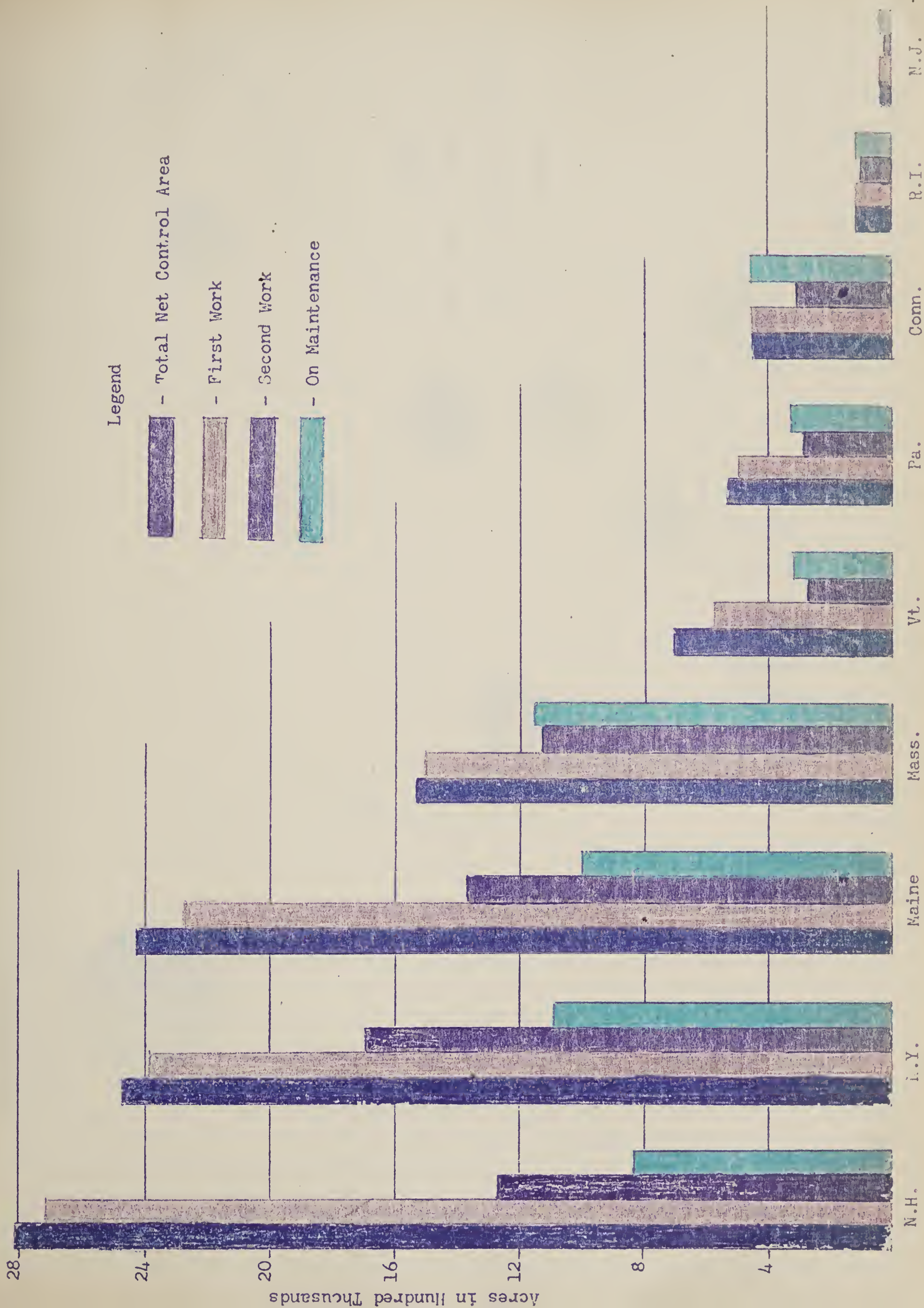
In connection with methods development, mention should be made of the new supplement to the Northeastern Field Manual with the intriguing title "So You Are Going to Work on Blister Rust". Prepared by the talented illustrator, District Leader Alton Miller of Connecticut, this manual was extremely helpful in instructing the field personnel in ribes eradication work. Cleverly prepared, it helps the men to visualize the important requisites for effective and efficient control work. In Massachusetts, an examination, based on material in the manual, was given to the field men, late in the season. The result indicated that it is an effective instructional tool.

Progress of the control program in the region during the past 33 years and the present status in each state are shown graphically in Charts I, II and III. Chart I indicates the approach to completion of initial control work, the big gap of 5,207,246 acres where rework is needed, and the increasing gap between area on maintenance and the acreage where maintenance workings are required already. Chart II shows the status of control in each state and emphasizes the initial and rework requirements. Chart III shows in graphic form for the region and each state the need for first work and rework; and the proportion of the acreage in the maintenance classification.

Chart I
 Progress of Control Work
 Northeastern Region
 1918-1950



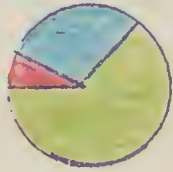
Status of Blister Rust Control in Northeastern Region 1950



STATUS OF WHITE PINE BLISTER RUST CONTROL

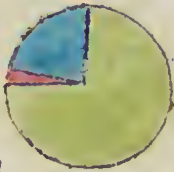
NORTHEASTERN REGION

DECEMBER 31, 1950



LEGEND

- Initial Control Required
- Re-examination Required
- On Maintenance



HIGHLIGHTS OF 1950

Table 2 - Summary of 1950 Ribes Eradication Work

Acreage Worked				Ribes Destroyed (Wild & Cult.)	Man Days
First	Second	Other	Total		
168,613	415,500	371,196	955,309	4,004,864	32,265

Nearly a million acres (955,309) were cleared of ribes, a slight decrease of 5.5% from last year but accomplished with 7.4% fewer man days of labor.

There was a slight improvement in the acreage output per man day. The regional average of 29.6 acres per man day for all work was 0.6 acres better than in 1949. The average number of ribes per acre was 4.2 as compared with 3.9 in 1949, an increase of 7.7%.

A substantial increase of 612,481 acres (6.3%) in area in the maintenance classification brought the total to 48.6% of total control area in the region.

The states and local cooperators continued their excellent support of the control program with total funds from this direct aid source amounting to the impressive total of \$304,052.93. This was \$192,298.78 more than federal W-E.14 funds and even \$45,370.52 more than federal W-A.14 and W-E.14 combined.

A total of 721,481 acres was detailed mapped and an additional 1,441,381 acres examined in connection with mapping activities. Compared with 1949 this represents a 46.9% increase in area mapped but a slight decrease in area examined. The number of man days devoted to these combined activities was about the same in the two years.

A special test of the use of a helicopter for mapping gave promise of rapid, accurate mapping at low cost.

The chemical 2,4,5-T was used as a ribicide in several states on a continuing experimental basis. The preliminary results were encouraging.

A new type of drag-line made of 18 guage 16 strand copper wire covered with orange-colored plastic was thoroughly tested. Most of the men preferred it to the venetian window cord.

A new illustrated leaflet to replace Miscellaneous Circular No. 22 was received early in the year. An illustrated supplement to the Northeastern Field Manual proved useful in instructing ribes eradication workers.

The administrative and supervisory set-up in the region was reorganized. This involved the abolition of the seven State Leader positions and the substitution therefor of three Area Leader positions. The regional office was moved from Cambridge, Massachusetts to Greenfield, Massachusetts in October.

PART IILEADERSHIP, COORDINATION AND TECHNICAL DIRECTION - WORK PROJECT BLR-1-1GENERAL STATEMENT

The leadership, coordination and technical direction of all blister rust control work in the Northeastern region is the responsibility of the Bureau of Entomology and Plant Quarantine. In 1950 this related to cooperative control work on state and private lands in the states of Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York and Pennsylvania. No work was performed in New Jersey or on federal lands in any state in the region.

The regional office provides the overall project planning and coordinates the control activities into a uniform program. This involves the use of federal, state, county, town, city and private funds in a balanced operation to perform control work where and when needed. In accordance with a cooperative agreement with each state, the services of technical personnel are provided by the federal government to organize and supervise the work. In each state, the official of the department or division responsible for blister rust control, has nominal charge of the program and is responsible for the formulation of State policy and the enforcement of state laws and regulations. The states furnish office space and other facilities for federal leaders at state headquarters. Cooperation is extended to counties, towns, cities, organizations and individuals.

Organization and Personnel

The program suffered a keen loss in August in the passing of Assistant Regional Leader Edward L. Joy. Although in service in this region a relatively brief time, he had won the complete confidence of the field men and had aided materially in the control program. It can be said of him that "he went about doing good" in blister rust control and forestry in general.

In October, the administrative and supervisory set-up under which the program has been functioning successfully since about 1918 was materially reorganized. Under the plan, the State Leader type of organization was abolished and an Area Leader plan substituted. The region was divided into three administrative areas with an Area Leader (GS-11) in charge in each. These areas are (1) Maine and New Hampshire in charge of Paul H. Simmonds, formerly a district leader in Pennsylvania; (2) Vermont, Massachusetts, Connecticut and Rhode Island under the leadership of Glenn R. Allison, transferred from service in Michigan in the North Central Region; and (3) New York, Pennsylvania and New Jersey under the direction of William Clave who was appointed to the position in 1949. This reorganization involved the following personnel changes:

<u>Positions Eliminated</u>		<u>Positions Changed</u>
1 Assistant Regional Leader	GS-12	3 State Leaders GS-9 to GS-7
7 State Leaders	GS-9	
2 Control Specialists	GS-9	
2 District Leaders	GS-7	
1 Clerk-Typist	GS-3	
1 Storekeeper	GS-2	

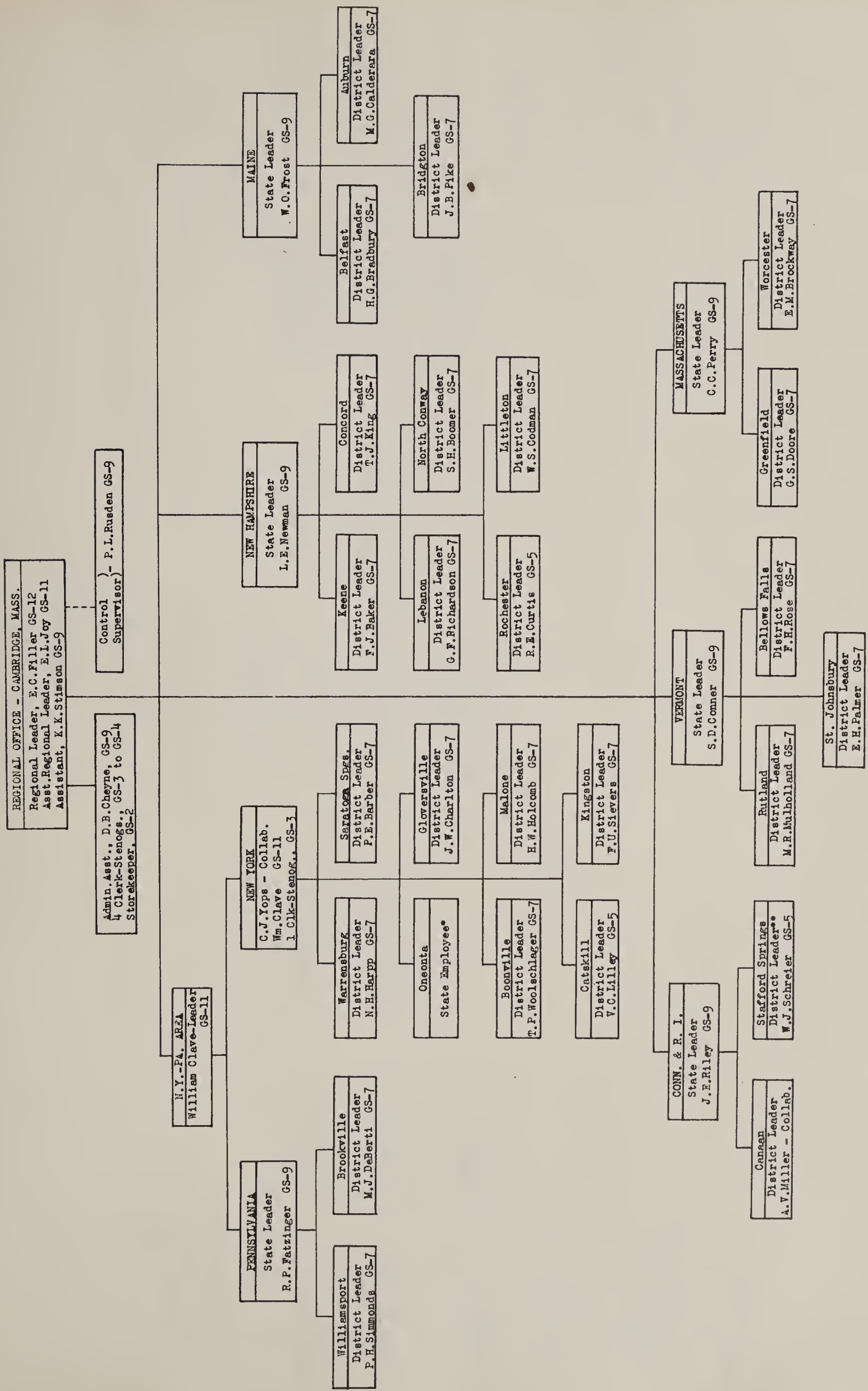
Coincident with the reorganization, the regional office was transferred from Cambridge, Massachusetts to Greenfield, Massachusetts on October 16-18. With this change it was planned to set up an administrative unit to handle the personnel, property and fiscal work of all Bureau activities in the region. This unit had not been established as of December 31, 1950, but will soon be in operation.

This reorganization and the transfer of the regional office to Greenfield, resulted in the retirement of State Leader Frost of Maine and State Leader Riley of Connecticut after faithful service of 33 yrs. and 32 yrs. respectively. The other state leaders have been reassigned. L. E. Newman is in charge of a district with headquarters at Concord, New Hampshire where he will maintain contact with the state authorities with whom he will also conduct informational and service work on blister rust control and fire prevention. E. P. Fatzinger will retain office relations with the State Department in Harrisburg, Pennsylvania; develop contacts with State Forestry personnel and directly supervise the conduct of work in a district. S. D. Conner was assigned to a district in New Hampshire with headquarters at East Jaffrey. C. C. Perry was reassigned on a temporary basis as a special assistant to summarize the results of several field studies, compile statistical data and perform related work. His headquarters remain at Boston, Massachusetts where temporarily he will maintain relations with cooperating state and federal officials. District Leaders Baker and King of New Hampshire voluntarily retired and accepted State appointments in forest fire protection work. In the regional office, Messrs. Stimson, Rusden and J. M. Perry were separated. Misses Manning and Duva were transferred to other federal agencies at Boston.

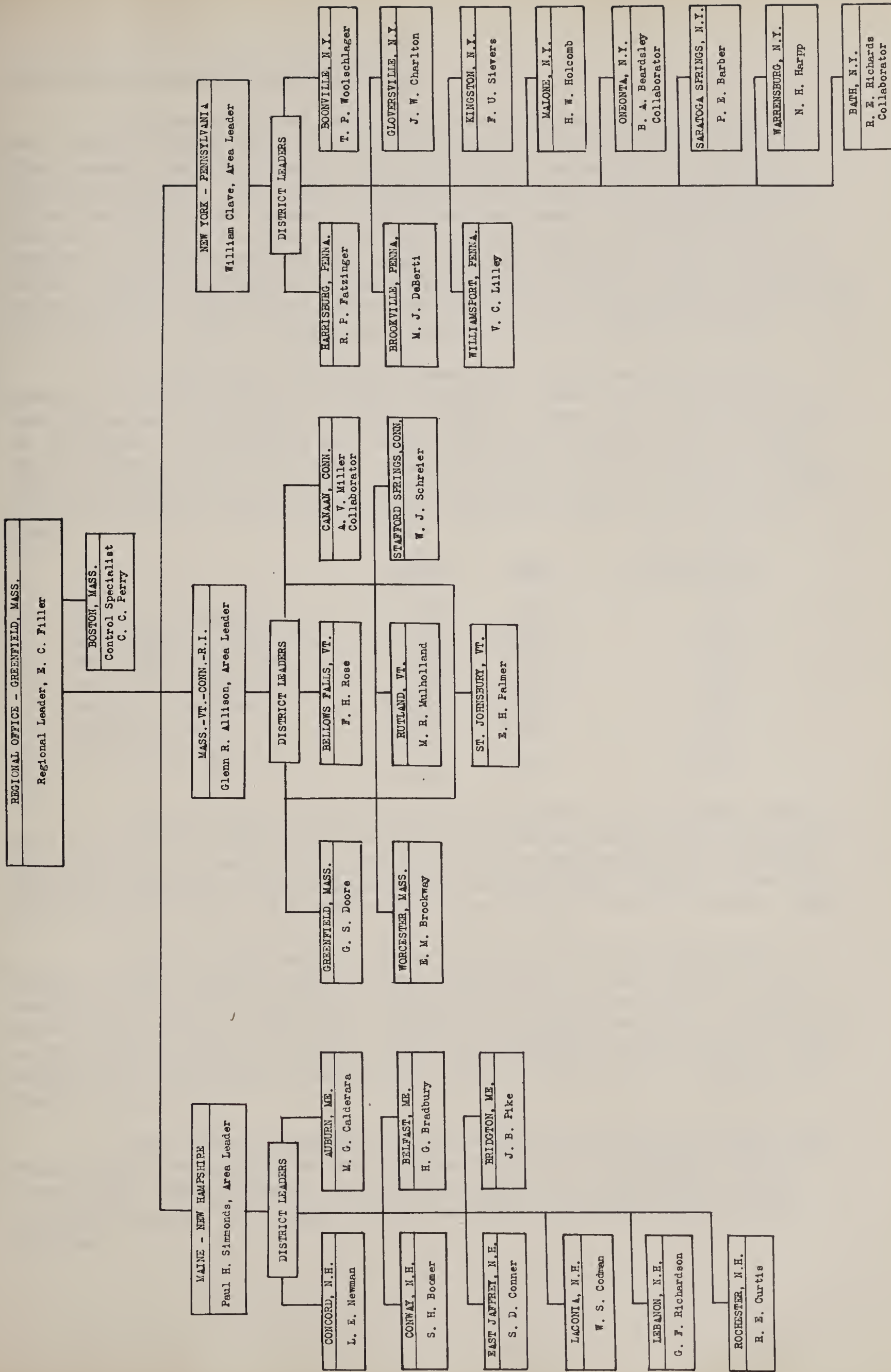
The headquarters of nine appointees were changed. One district in New Hampshire and one in New York were eliminated and the areas combined with other existing districts. The New Hampshire plan under which the District Leaders spent one-fourth of their time on fire protection work, and were paid by the state for such service, was discontinued.

The helpful cooperation, tolerance and loyalty of the blister rust control personnel, and the officials of the cooperating state agencies, aided materially in the orderly accomplishment of the reorganization.

The names, grade and assignments of the permanent personnel in the region on December 31, 1950 are shown in the following organization chart.



*State District Forester gives general supervision to control activities in this district.
**Supervises work in eastern Connecticut district and all work in Rhode Island.
A state foreman supervises control work in two western New York counties outside the present organized districts.
State Leader in Pennsylvania also directs control activities in Central District.



Informational and Service Activities

Informational and Service work was carried on as heretofore to keep federal, state and local agencies and the general public informed about the disease, the importance of its control and the progress made toward attaining control. This type of activity is of particular significance in Maine, New Hampshire, Vermont, and Connecticut where the towns assist in financing control work and in New York where counties add their financial support. The importance of this assistance is indicated by the fact that cities, towns and counties provided nearly 30% of the direct-aid cooperative money in 1950. These funds added to direct-aid state appropriations account for more than one-half of all money expended for the program in 1950.

In comparison with 1949, there was a slight decrease in the number of meetings held and in the attendance. About the same number of news items were published in 1950 as in 1949. There was a slight decrease in the number of interviews with individuals and related follow-up calls, but an increase in the number of persons instructed in the field. Complete data on informational and service activities for 1950 are reported in Table 3. The following tabulation provides a detailed comparison for the two years:

	<u>1949</u>	<u>1950</u>	<u>% Increase or Decrease</u>
Meetings Addressed.....	277	262	-5.4
Attendance at meetings ...	19,575	16,281	-16.8
News items published.....	192	197	+2.6
Demonstrations placed	128	99	-22.6
Initial interviews.....	5,703	5,156	-9.6
Follow-up calls.....	4,117	3,457	-16.0
Persons instructed in the field.. ..	2,339	2,735	+16.9

Instructional work with forestry students was continued. During 1950 this type of activity was performed at the University of New Hampshire, the University of Connecticut, the University of Massachusetts, the State College of Forestry, State Ranger School and Paul Smith School in New York, Yale University, and the Pennsylvania State College (Sophomore summer camp).

Contacts were made as heretofore with practicing foresters -- federal, state, county, extension and consulting, to enable them to more readily identify the disease and damage in all stages as an aid in the development of management plans, including salvage operations. Instruction in the identification of ribes is given to emphasize the importance of the selection of white pine planting sites and the necessity for adequate and timely control work.

There were 206 showings of the blister rust motion picture films. These films have always been an important adjunct to successful informational work. These showings were in 100 towns to an aggregate audience of 29,431 persons. The usage of the new films by regional title was as follows:

<u>Film</u>	<u>Number of Times Used</u>
Northeastern	106
General	55
North Central	11
Northwestern	7
Pacific Coast	5
Southern Appalachian	3

In addition to the above, films of an earlier vintage were shown on 19 occasions. If the reports received as to the use of films are complete, it appears that six leaders made no use of the films and three leaders used them only once. With better attention to scheduling and the use of projection equipment now generally owned by school authorities, it should be possible to step up this important phase of informational work.

Publications

U.S.D.A. Leaflet 265 "Control of White Pine Blister Rust" prepared by C. C. Perry, was released early in the year as a replacement for Miscellaneous Publication No. 22 which has performed excellent service for so many years. Tree Pest Leaflet No. 26 "White Pine Blister Rust" originally prepared by C. C. Perry in 1938 and published as an item in "Important Tree Pests of the Northeast" in 1940, was slightly revised for reprinting in 1951 under the sponsorship of the New England Section of the Society of American Foresters. There is urgent need for an abbreviated leaflet for use in connection with the showing of films and for unrestrained distribution at displays at agricultural fairs. If a new inexpensive leaflet cannot be prepared, then a reprint of the leaflet currently in use should be made at once. A leaflet describing accomplishments and the status of control work in the region should also be prepared.

Table 3 - Summary of 1950 Informational and Service Activities of District Blister Rust Control Leaders in Northeastern Region

Informational Activities

State	Meetings Addressed		No. Radio Talks	No. Items Published	No. Demonstrations Placed
	No.	Attendance			
Maine	18	1,123	-	36	9
N. H.	103	4,495	-	80	30
Vt.	35	1,220	-	21	10
Mass.	17	3,184	1	11	2
R. I.	2	12	-	-	2
Conn.	15	314	1	1	9
N. Y.	64	5,523	1	41	16
Penna.	8	410	-	7	21
All States	262	16,281	3	197	99
Average Per Leader	1950	9.0	0.1	6.8	3.4
	1949	9.6	0.2	6.6	4.4

Service Activities

State		No. Initial Interviews	No. Follow-up Calls	No. Individuals Instructed in Field
Maine		1,455	288	740
N. H.		799	1,246	431
Vt.		306	562	61
Mass.		1,078	46	35
R. I.		111	46	14
Conn.		249	137	206
N. Y.		903	1,099	913
Penna.		255	33	335
All States		5,156	3,457	2,735
Average Per Leader	1950	177.7	119.2	94.3
	1949	196.7	142.0	80.7

Cooperation With Other Agencies

Excellent cooperative relations were maintained between the blister rust control personnel and representatives of the numerous forestry and agricultural agencies and with officials responsible for the administration of federally-owned forest lands. In each state, close ties are maintained with the forestry or agricultural department that has state responsibility for the blister rust control work. Associated with this is a cooperative relationship with other agencies and groups such as the Extension Service, Soil Conservation Service, forest management organizations and industrial forest managers. The aim is to advise and assist such personnel regarding blister rust control problems and their relation to forest management.

Several of the leaders assisted in the inspection of restricted products in the Japanese Beetle and Gypsy Moth Quarantine regulations.

Expenditures under Project BLR-1-1

The following tables summarize the expenditures of Project BLR-1-1 for 1950.

Table 4 - Total Expenditures and Contributed Services For Work Project BLR-1-1
During Calendar Year 1950

State	Value of Contributed Services By States*	B.E. and P. Q. Expenditures (W-A.14)	Total
Maine	\$ 500.00	\$ 21,168.23	\$ 21,668.23
N.H.	300.00	32,920.15	33,220.15
Vt.	530.00	16,816.21	17,346.21
Mass.	-	15,051.38**	15,051.38
R. I.	120.00	-	120.00
Conn.	860.00	8,376.02	9,236.02
N.Y.	3,000.00	37,754.52	40,754.52
Penna.	385.00	14,841.75	15,226.75
All States	\$ 5,695.00	\$146,928.26	\$152,623.26

* Technical services of state employees

** In addition, a salary item of \$127.20 was paid covering a
longevity salary increase retroactive to December 24, 1949.

Table 5 - Federal W-A.14 Expenditures For Work Project BLR-1-1
During Calendar Year 1950

State	Salaries of Appointees	L/A	Leases	Purchase Orders	Total
Maine	\$ 20,716.32	\$ 37.91	\$ 414.00	-	\$21,168.23
N.H.	32,234.61	25.54	660.00	-	32,920.15
Vt.	16,797.33	18.88	-	-	16,816.21
Mass.	15,032.50**	18.88	-	-	15,051.38
R.I.	599.99	-	-	-	599.99
Conn.	7,766.59	9.44	-	-	7,776.03
N.Y.	37,449.14	5.38	300.00	-	37,754.52
Penna.	14,650.36	11.39	180.00	-	14,841.75
All States	\$145,246.84	\$ 127.42	\$1,554.00	-	\$146,928.26

Tables 4 and 5 do not include Federal W-A.14 expenditures for the
regional office amounting to \$48,823.00

PART IIICOOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATELY-OWNED LANDSWORK PROJECT BLR-3-1GENERAL STATEMENT

Nearly 99.9% of all the white pine in the control area in the Northeastern Region is on state and privately-owned lands. Blister rust control measures are being applied on these lands under a cooperative agreement in each state between the U. S. Bureau of Entomology and Plant Quarantine and the authorized state regulatory agency - usually the state forestry department. The Bureau is responsible for the leadership, coordination and technical direction of all control activities and under the provisions of the Lea Act, federal funds are allocated for control work in cooperation with the states, counties, towns, associations, and individual pine owners.

The present net control area on state and privately-owned lands comprises 11,134,709 acres including 4,006,830 acres of white pine growth meeting stocking requirements for blister rust control. The initial ribes eradication work has been completed on 95.3% of the control area, 58.3% has been worked two or more times and 48.6% is now classified as being on maintenance. First work is still needed on 527,682 acres and an additional 5,204,723 acres which have been worked at least once in past years need examination and any necessary rework performed before the areas can be placed on maintenance.

State and Local Cooperation

In Maine, New Hampshire, Massachusetts, Connecticut, and New York, state funds are appropriated specifically for blister rust control, while in Vermont, Rhode Island and Pennsylvania, allotments for this purpose are made from state appropriations for general forestry or pest control work. Additional funds were also allotted from other state appropriations during 1950 in Massachusetts, Connecticut and New York. Total state expenditures and contributed services for Project BLR-3-1 during 1950 amount to \$214,556.03, a decrease of 7.1% as compared with the preceding year.

Town cooperation was solicited in Maine, New Hampshire, Vermont, and Connecticut during 1950. A total of 185 towns in these four states expended \$63,881.84 for cooperative ribes eradication work as compared with \$51,345.41 expended by 188 towns in 1949. This represents an encouraging increase of about 20%. One Massachusetts city expended \$1,571.20 and three towns \$253.20.

County cooperation was restricted to New York where 18 counties spent \$22,043.30 for control work (including \$840.00 for value of contributed services), a commendable increase of 11%.

Funds from individuals for special control work on their holdings amounted to \$3,571.76 in 1950 from 21 owners.

The following tables summarize the individual and town cooperation by states.

Table 6 - Local Cooperation on Blister Rust Control Work During 1950

Individual Cooperation

State	No. Cooperators (All on Ribes Eradication)	Amount Spent By Individual Cooperators
Maine	2	\$ 742.65
N.H.	1	346.48
Vt.	5	1,586.59
Mass.	10	810.04
N.Y.	3	86.00
All States	21	\$3,571.76

Town Cooperation

State	Number of Towns Making Appropriations	No. Town Contributions	Amount Town Money Expended
Maine	58	-	\$14,498.08
N.H.	92	-	38,425.56
Vt.	30	-	5,888.36
Mass.	-	4	1,824.40
Conn.	5	-	3,245.44
All States	185	4	\$63,881.84

During 1950, total state and local cooperative expenditures and contributed services for Project BLR-3-1 amounted to \$304,052.93 a slight increase of 0.3%. Except in 1949, there has been an increase in state and local cooperative funds since 1941.

A summary of all state and local expenditures and contributed services' values from 1942 to 1950 is given in the following table:

Table 7 - State and Local Cooperative Expenditures and Contributed Services (Direct Aid)
For Project BLR-3-1 During Period 1942-1950, Inclusive

Calendar Year	States	Counties	Towns	Individuals	Total
1942	\$ 47,628.17	\$ 9,534.75	\$ 15,601.04	\$ 2,193.91	\$ 74,957.87
1943	50,315.35	7,552.88	17,400.82	906.56	76,175.61
1944	56,307.48	11,536.91	17,686.72	833.98	86,365.09
1945	63,509.81	12,162.14	25,039.62	360.85	101,072.42
1946	137,858.85	15,366.66	31,414.71	4,614.71	189,254.93
1947	195,595.14	16,886.81	47,842.22	7,594.15	267,918.32
1948	235,301.19	17,063.52	54,145.80	4,013.14	310,523.65
1949	230,967.43	19,846.84	51,345.41	872.82	303,032.50
1950	214,216.03	22,043.30	64,221.84	3,571.76	304,052.93
Total	\$1,231,699.45	\$131,993.81	\$324,698.18	\$24,961.88	\$1,713,353.32

Control Area Examination and Mapping Work

The limitation of available funds continued to handicap mapping operations. The man days devoted to this type of work amounted to 4,175, a close approximation of the 4,041 man days in 1949. The 721,481 acres mapped represents an encouraging increase of 230,399 acres or 46.9%. The man days charged to mapping include the time devoted to the examination of additional areas which ultimately are not mapped. In 1950, such examinations involved a grand total of 1,441,381 acres. The man days in the two phases are not segregated in present record-keeping. If, however, the acreages are combined the man day per acre production figure was about 518 acres as against a comparable figure of 495 in 1949. The large increase in acreage mapped is evidently the result of increased efficiency in the use of aerial photographs.

One of the important results of examination work and remapping is the discontinuance of acreage where pine no longer meets minimum standards and the reduction of protection zone acreage. The net reduction in total control area in 1950 was 202,665 with a net decrease of 45,387 acres in pine area.

A special test of the use of a helicopter for mapping was made in cooperation with Barberry Eradication personnel. The results were most promising as a possible method of rapid, accurate mapping at low cost. A report of these tests was prepared by Messrs. Newman, Stimson and Curtis for further study as to the possibilities through joint use of a helicopter on several Bureau projects.

The examination and mapping work done in 1950 is summarized in the following table:

Table 8 - Results of 1950 Control Area Examination and Mapping Work

State	Acreage Detail Mapped			Additional Acreage Examined But Not Mapped			Total Man Days
	Initial Mapping	Re- mapping	Total	Inside Control Area	Outside Control Area	Total	
Maine	17,034	34,441	51,475	8,954	75,549	84,503	48
N.H.	122,467	128,272	250,739	39,490	59,722	99,212	1,010
Vt.	637	2,825	3,462	36,486	31,250	67,736	103
Mass.	19,019	51,772	70,791	16,873	64,442	81,315	115
R. I.	0	7,664	7,664	839	4,309	5,148	134
Conn.	0	65,607	65,607	2,631	174,463	177,094	291
N.Y.	50,530	184,246	234,776	217,628	274,657	492,285	2,255
Penna.	6,140	30,827	36,967	74,535	359,553	434,088	219
All States	215,827	505,654	721,481	397,436	1,043,945	1,441,381	4,175

RIBES ERADICATION WORK ON STATE AND PRIVATE LANDS

General Statement

The accomplishments in ribes eradication work during 1950, closely approximated the results in 1949. However, they fell far short of requirements. This develops from the fact that there is a large backlog of urgent work to be done, whereas there has been a steady reduction in available funds.

Weather conditions were ideal for the work in the spring and continued throughout the season. In most parts of the region, there was a deficiency in rainfall until September. Little time was lost on account of inclement weather.

Labor was available in sufficient supply until August when the threatening war conditions materially disturbed the younger men and those in reserve organizations were called back to military service. Under these conditions it was difficult to keep full quotas of competent men in some districts. There was complaint in Connecticut and Rhode Island that sub-standard labor required intensive supervision to maintain satisfactory production rates.

Wage Rates for Temporary Federal Personnel

Effective on May 1, 1950 the Regional Wage Rate Board established the following hourly rates of pay for federal L/A employees:

Foremen and Scouts	--	\$1.10
Laborer-crew leader	--	\$.98
Laborers	--	\$.88

Exceptions to the regional rates were necessary in two states. In Massachusetts and New Hampshire a \$1.25 rate was provided for foremen and in Massachusetts, a \$0.98 rate was in effect for laborers.

Temporary Personnel Employed on Control Work

During 1950, the maximum number of workers employed by all agencies was 569, only 3 less than the figure in 1949. The decrease in the number of federal workers however, was from 265 to 144, a drastic decrease attributable to the further reduction in the amount of federal funds available for the hire of temporary personnel. The decrease in total man days of employment was 7.4%.

State	Maximum Number of Workers Employed by all Agencies	Federal Workers (W-E.14 Funds)		
		Maximum Number	Total Number	Period of Peak Employment
Maine	101	27	59	August 6 - 19
N. H.	128	16	36	June 10 - 23
Vt.	44	25	37	August 6 - 19
Mass.	41	13	16	August 6 - 19
R. I.	2	1	1	June 10 - 23
Conn.	21	3	3	June 10 - 23
N. Y.	183	48	67	August 6 - 19
Penna.	49	11	11	June 10 - 23
All States	569	144	230	

Results of Ribes Eradication Work on State and Private Lands

Since none of the 1950 ribes eradication work was performed on federally-owned lands the total accomplishment is creditable to the state and private lands classification. This includes the removal of 4,004,864 ribes (wild and cultivated) from 955,309 acres by 32,265 mandays of labor. The percentage of total acreage, number of ribes and man days in each state is outlined below:

state	% <u>Total Acreage</u>	% <u>Total No. Ribes</u>	% <u>Total Man days</u>
Maine	15.7	13.4	14.7
New Hampshire	18.8	26.2	19.9
Vermont	5.8	5.3	7.5
Massachusetts	8.4	5.3	6.5
Rhode Island	0.7	0.1-	0.4
Connecticut	7.5	2.2	2.5
New York	35.1	37.4	38.3
Pennsylvania	8.0	10.1	10.2

Of the total acreage worked in 1950, initial work accounted for 17.7%, second work 43.5% and other workings including maintenance workings 38.9%. Although the 1949 record of over a million acres was not quite equalled, the coverage in 1950 was accomplished with 7.4% less man days of labor than in 1949. This represents a gain of 2.1% in production rate.

The results of all eradication work on state and private lands is summarized in Table 10.

Table 10 - Ribes Eradication Work on State and Private Lands During 1950

State	Total Acreage Worked	% Total For Each State	Average Acreage Worked Per District in Each State	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked per Man Day
				Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	16,184	9.6	5,395	156,940	265	1,132	9.7	.070	14.3
N. H.	32,952	19.5	5,492	374,838	170	1,516	11.4	.046	21.7
Vt.	27,191	16.1	9,064	115,301	169	1,184	4.2	.044	23.0
Mass.	21,897	13.0	10,949	52,329	447	531	2.4	.024	41.2
N. Y.	56,922	33.8	6,325	696,548	786	3,895	12.2	.068	14.6
Penna.	13,467	8.0	4,489	107,610	210	795	8.0	.059	16.9
All States	168,613	100.0	6,485	1,503,566	2,047	9,053	8.9	.054	18.6

Second Work									
Maine	79,908	19.2	26,636	314,460	336	2,494	3.9	.031	32.0
N. H.	124,977	30.0	20,829	558,143	1,019	4,339	4.5	.035	28.8
Vt.	22,214	5.4	7,405	80,990	30	1,055	3.6	.047	21.1
Mass.	46,782	11.3	23,391	117,038	892	1,145	2.5	.024	40.9
N. Y.	94,548	22.8	10,505	428,184	271	3,950	4.5	.042	23.9
Penna.	47,071	11.3	15,690	275,172	114	1,948	5.8	.041	24.2
All States	415,500	100.0	15,981	1,773,987	2,662	14,931	4.3	.036	27.8

Other Workings									
Maine	53,507	14.4	17,835	65,326	109	1,113	1.2	.021	48.0
N. H.	21,372	5.7	3,562	115,619	5	568	5.4	.027	37.6
Vt.	6,241	1.7	2,080	15,228	-	190	2.4	.030	32.8
Mass.	11,766	3.2	5,883	45,204	222	419	3.8	.036	28.1
R. I.	6,249	1.7	6,249	869	-	140	0.1	.022	44.6
Conn.	71,570	19.3	35,785	86,840	-	800	1.2	.011	89.5
N. Y.	184,299	49.6	20,477	374,256	120	4,520	2.0	.025	40.8
Penna.	16,192	4.4	5,397	23,969	68	531	1.5	.033	30.5
All States	371,196	100.0	12,799	727,311	524	8,281	2.0	.022	44.8

All Work									
Maine	149,599	15.7	49,866	536,726	710	4,739	3.6	.032	31.6
N. H.	179,301	18.8	29,883	1,048,600	1,194	6,423	5.8	.036	27.9
Vt.	55,646	5.8	18,549	211,519	199	2,429	3.8	.044	22.9
Mass.	80,445	8.4	40,222	214,571	1,561	2,095	2.7	.026	38.4
R. I.	6,249	0.7	6,249	869	-	140	0.1	.022	44.6
Conn.	71,570	7.5	35,785	86,840	-	800	1.2	.011	89.5
N. Y.	335,769	35.1	37,307	1,498,988	1,177	12,365	4.5	.037	27.2
Penna.	76,730	8.0	25,577	406,751	392	3,274	5.3	.043	23.4
All States	955,309	100.0	32,942	4,004,864	5,233	32,265	4.2	.034	29.6

There was a slight increase of 2.2% in the total number of ribes eradicated in the region, although there was a considerable difference between states. Percentage increases were reported in Maine, New Hampshire, Massachusetts, and Pennsylvania, with decreases in Vermont, Rhode Island, Connecticut and New York. The extremes were the increase of 211% in Massachusetts due to the recurrence of skunk currants, and the decrease of 58% in Rhode Island.

The average number of ribes per acre for first work was 8.9 with 4.3 for second work and 2.0 for other workings with an average of 4.2 for all work. These figures do not represent any marked change from 1949. Significantly, the figure for other workings was exactly the same in each year; namely, two bushes per acre. This may be an indication of the stabilization of the ribes population after second workings. Variations from the normal reduction in the unit population by workings, prevailed in some states. In New Hampshire and Massachusetts, for example, the unit for other workings was a fraction above the unit for second working. The most spectacular reduction in unit populations are shown in New York where they were 12.2, 4.5 and 2.0 by numerical workings. An approach to this also applies in New Hampshire where the comparative units were 11.4, 4.5 and 5.4. In Maine they were 9.7, 3.9 and 1.2.

Ribes Eradication Work on Maintenance Areas

Starting with the first use of the maintenance classification in 1941, additional acreage has been added each year until 5,402,304 acres of state and privately-owned lands are now in this category. In the period from 1941 to 1945 small amounts of this were reworked and reported as second working or other working, whichever fit the case. Following the decision reached at the Regional Leaders' Conference in Washington in 1946, all maintenance area worked is now reported in the omnibus tables with other workings, but in this region it is also compiled separately as maintenance working. Consequently, the total of maintenance working in the Northeastern Region is the acreage worked from 1946-1950, inclusive, which is summarized in Table 34 of the Appendix.

During 1950 maintenance of control work was done in all states. The results are given in the following table:

Table 11 - Maintenance Work on State and Private Lands During 1950
(Data included in Table in Other Workings)

State	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
		Wild & Cult.	Cult. Only		Ribes	Man Days	
Maine	510	2,570	-	48	5.0	.094	10.6
N.H.	5,248	26,429	5	98	5.0	.019	53.6
Vt.	993	4,501	-	33	4.5	.033	30.1
Mass.	1,350	3,737	-	55	2.8	.041	24.5
R.I.	6,249	869	-	140	0.1	.022	44.6
Conn.	71,570	86,840	-	800	1.2	.011	89.5
N.Y.	56,271	64,863	5	1,136	1.2	.020	49.5
Penna.	7,351	8,639	21	240	1.2	.033	30.6
All States	149,542	198,448	31	2,550	1.3	.017	58.6

In Connecticut and Rhode Island, all work done in 1950 was on maintenance areas. In the other states, the percentage of maintenance work was as follows:

Maine	0.3%	N. Y.	16.8%
N. H.	2.9%	Penna.	9.6%
Vt.	1.8%		
Mass.	1.7%	Region	15.7%

The average number of ribes per acre figure on maintenance workings was rather high in some states, ranging from 5 in Maine and New Hampshire to a low of 0.1 in Rhode Island. The regional average was 1.3. Maintenance work was reported for the first time in Massachusetts. In this state and particularly in Maine the acreages worked per man day were abnormally low apparently due in part to the small area involved.

Comparison of 1949 and 1950 Ribes Eradication Results

In four of eight states, the number of man-days in 1950 was from 3.4% to 30.3% below that of 1949. The figures for the region show less than 6% decrease in acreage worked, a decrease of 7% in man-days used and an increase of 2% in the number of ribes destroyed. Connecticut used 12% less man-days but increased the acreage worked by 11%. New York had a 30% decrease in available man-days, yet the acreage worked decreased less than 9%. Massachusetts performed 24% more in acreage worked in 1950 as a result of an increase of 29.3% in man-days even though the number of ribes destroyed increased 211% over 1949. In Maine 51% more ribes were destroyed with 47% more man-days, but the acreage decreased 15% due in part to the scattered location of the town projects and the use of local inexperienced men. Rhode Island with only two state men involved did 71% less work with 15% less man-days. This decrease in productivity was due chiefly to personnel problems. Figures for acreage, ribes and man-days of employment are presented in the following table for comparison of the 1949 and 1950 results.

Table 12 - Comparison of Results of 1949 and 1950 Ribes Eradication Work on State and Private Lands

State	Total Acreage Worked			No. Ribes Destroyed			Man Days Employment		
	1949	1950	% Increase or Decrease in 1950	1949	1950	% Increase or Decrease in 1950	1949	1950	% Increase or Decrease in 1950
Maine	175,227	149,599	-14.6	354,590	536,726	+ 51.4	3,219	4,739	+ 47.2
N. H.	174,150	179,301	+ 3.0	719,651	1,048,600	+ 45.7	5,460	6,423	+ 17.6
Vt.	65,770	55,646	-15.4	226,564	211,519	- 6.6	2,334	2,429	+ 4.1
Mass.	65,052	80,445	+23.7	68,957	214,571	+211.1	1,620	2,095	+ 29.3
R. I.	21,491	6,243	-70.9	2,047	869	- 57.5	165	140	- 15.2
Conn.	64,520	71,570	+10.9	109,387	86,840	- 20.6	910	800	- 12.1
N. Y.	367,520	335,769	- 8.6	2,117,556	1,498,988	- 29.2	17,735	12,365	- 30.3
Penna.	76,958	76,730	- 0.3	320,073	406,751	+ 27.1	3,388	3,274	- 3.4
All States	1,010,688	955,309	- 5.5	3,918,825	4,004,864	+ 2.2	34,831	32,265	- 7.4

The following table compares 1949 and 1950 production rates. It will be noted that six states reported first and second workings and all states made other workings. For the region, there was approximately an 8% increase in production rate on first work, a decrease of 2% on second and an 8% increase for other work. There was a slight increase of about 2% for all work.

There were increases in nine of the twenty possibilities for a change in production rate, but these were largely offset by the decreases in the other eleven. It is possible, of course, that with an increase of 30% in 1948 and 28% in 1949, further large increases in production rate may not be expected until the rework load has been handled. The increase of 2% in the number of ribes destroyed is a factor in the rate situation.

New York increased the acreage worked per man-day by 31%. Connecticut by over 26%, and Pennsylvania by over 3%. Decreases occurred in the other states particularly in Rhode Island and Maine. Some of the causes have already been mentioned. In addition, the reorganization of the permanent staff may have been a contributing factor. The most significant changes in production rates occurred in 'Other Work', five states increasing their production by greater use of trained scouts, small crews, and drag line method.

Table 13 - Comparison of Production Rates For 1949 and 1950
(Acres Worked Per Man Day)

State	First Work			Second Work			Other Work			All Work		
	1949	1950	% Increase or Decrease in 1950	1949	1950	% Increase or Decrease in 1950	1949	1950	% Increase or Decrease in 1950	1949	1950	% Increase or Decrease in 1950
Maine	32.4	14.3	-55.9	48.2	32.0	-33.6	110.0	48.0	-56.4	54.4	31.6	-41.9
N.H.	24.9	21.7	-12.9	32.9	28.8	-12.5	37.3	37.6	+ 0.8	31.9	27.9	-12.5
Vt.	28.3	23.0	-18.7	29.0	21.1	-27.2	22.9	32.8	+43.2	28.2	22.9	-18.8
Mass.	37.6	41.2	+ 9.6	41.0	40.9	- 0.2	37.5	28.1	-25.1	40.2	38.4	- 4.5
R.I.	-	-	-	-	-	-	130.2	44.6	-65.7	130.2	44.6	-65.7
Conn.	-	-	-	-	-	-	70.9	89.5	+26.2	70.9	89.5	+26.2
N.Y.	10.8	14.6	+35.2	18.1	23.9	+32.0	32.5	40.8	+25.5	20.7	27.2	+31.4
Penna.	17.5	16.9	- 3.4	22.2	24.2	+ 9.0	26.4	30.5	+15.5	22.7	23.4	+ 3.1
All States	17.3	18.6	+ 7.5	28.4	27.8	- 2.1	41.4	44.8	+ 8.2	29.0	29.6	+ 2.1

Checking of 1950 Ribes Eradication Work

Three procedures are used in checking the ribes eradication work in this region: (1) foreman's observations as he works behind the crew and virtually reexamines the ground covered by the men in formation, (2) rework of a portion of a strip by the entire crew, and (3) measured general checks of worked areas by the district leader or checker. In addition, supervisory personnel make observations of crews at work to make certain that proper procedures are being used.

During the past three seasons, all measured general check reports have been sent direct from the field to the state leaders' offices for summarization and analysis. This new procedure makes it possible for the state leader to follow checking results closely and take any corrective action deemed necessary within a few days after the check is made. However, there has been some laxity in the submission of consolidated summaries to the regional office.

The district leaders and their assistants spent 3,574 hours making 1,981 measured general checks in worked areas during the 1950 field season. A total of 9,345 ribes with 24,131 feet of live stem were found on the 3,142 acres covered by this type of checking, or an average of 3.0 bushes with 7.7 feet of live stem per acre. Table 14 summarizes the results of this work by states.

Measured general checking is a chore. Where leaders have assistants to use for the purpose, a substantial number of checks can be made. On the other hand, where no assistance is available, the leader has to decide whether he can accomplish more through supervisory general checking rather than measured checking. Moreover, with the reduction in ribes population there are many instances where a leader feels that measured checking is wasteful of time. This has resulted in a situation where some leaders confine their efforts to areas where concentrations have been encountered by the field units. This procedure distorts the regional picture, because it is not possible to compare the results from such procedure with the records from districts where the leader checks a representative number of areas, including work where the ribes population was negligible. Comparisons between states or even districts is not feasible.

Table 14 shows that where assistants are available such as in New York, a goodly number of measured general checks can be made. In 1950, New York reported 1,203 checks representing a 0.68% check of the worked area in the state, whereas Maine at the other extreme shows only 52 such checks covering but 0.04% of the acreage worked. In the matter of percentage of work approved, the situation is confused by the fact that in some states, notably Rhode Island, Connecticut, and possibly Pennsylvania, measured general checking was confined to areas where the field units had encountered concentrations of ribes. This, in contrast with checking in Vermont, Massachusetts, New York and Maine where the percentage approved ranged from 100% to 95.3%.

It is clear that the necessity for a review of measured general checking in the region is indicated.

Table 14 - Results of Measured General Checks of 1950 Ribes Eradication Work

State	No. Checks	Hours Checking	Acres in Strip Checks	Ribes Found on checks		Ribes Live Stem Found on checks		Control Work	
				Total Number	Ave. Per Acre	Total F.L.S.	F.L.S. per Acre	Approved	Dis-approved
Maine	52	67	53	160	3.0	344	6.5	49	3
N.H.	111	136	74	292	3.9	515	7.0	105	6
Vt.	157	202	260	629	2.4	1,816	7.0	157	0
Mass.	207	225	210	672	3.2	1,490	7.1	203	4
R.I.	12	23	21	62	3.0	377	18.0	8	4
Conn.	51	109	97	471	4.9	1,600	16.5	44	7
N.Y.	1,203	2,626	2,285	6,241	2.7	15,425	6.8	1,147	56
Penna.	188	186	142	818	5.8	2,564	18.1	151	37
All States	1,981	3,574	3,142	9,345	3.0	24,131	7.7	1,864	117

State	Total Acreage Cleared of Ribes	Total Acreage in Measured General Checks	Percentage of Worked Acreage Covered By Measured General	Percentage Areas Checked Which were Approved
Maine	149,599	53	0.04	94.2
N.H.	179,301	74	0.04	94.6
Vt.	55,646	260	0.47	100.0
Mass.	80,445	210	0.26	98.1
R.I.	6,249	21	0.34	66.6
Conn.	71,570	97	0.14	86.3
N.Y.	335,769	2,285	0.68	95.3
Penna.	76,730	142	0.19	80.3
All States	955,309	3,142	0.33	94.1

Automotive Equipment

At the end of 1950, federally-owned automotive equipment in this region included 62 trucks and 33 passenger-carrying vehicles as follows:

<u>Year of Manufacture</u>	<u>Trucks (All Half-Ton)</u>			<u>Passenger Cars</u>	
	<u>Pick-Ups</u>	<u>Sedan Deliveries</u>	<u>Suburban Carry-All</u>	<u>Coaches</u>	<u>Sedans</u>
1935.....	13	-	-	-	-
1936.....	6	-	-	-	1
1939.....	4	2	1	-	-
1940.....	-	-	-	1	-
1941.....	-	-	-	1	1
1942.....	-	2	-	4	-
1947.....	32	-	-	-	3
1948.....	-	-	-	4	-
1949.....	2	-	-	-	14
1950.....	-	-	-	-	4
Total	57	4	1	10	23

The four 1950 model passenger cars were delivered during the first half of the calendar year 1950. During the period October 1 to December 31, 1950 we acquired by transfer from the Division of Gypsy and Brown Tail Moths Control three trucks and two passenger cars.

As indicated above, 26 of the 62 trucks are of 1935-1939 origin, two of these cars are being declared surplus and similar action will be taken later on two additional trucks if two new cars can be purchased for use in New York. Many of the other old trucks are in poor condition and should be replaced as soon as funds are available. The mileages for some of the trucks is no indication of their true condition, since they have been used chiefly on rough rural roads and some of them had hard usage before being transferred to our Division, especially the 1939 Plymouths obtained from the Division of Grasshopper Control.

Injuries to Temporary Federal L/A Employees

A total of 230 temporary workers were employed for 9,451 man days on federal L/A funds. These men actually worked 8,745 days and were granted annual, sick or terminal leave for the remaining 706 days. Only 5 or 2% of the total number of men sustained injuries which necessitated medical services while on official duty. No time was lost by any of our employees on account of injury, but one man had to take 8 days sick and annual leave due to ivy poisoning.

Table 15 - Number and Types of Injuries To Temporary Federal L/A Employees
During Calendar Year 1950

State	Total No. Injuries	Causes of Injuries			
		Ivy or Oak Poisoning	Slipping or Falling	Insect Bites	Misc.
Maine	1	1	-	-	-
N.Y.	4	3	1	-	-
Total	5	4	1	-	-

The five injuries reported in 1950 represent a 44.4% decrease from the nine cases in 1949.

State Compensation For Cultivated Ribes Destroyed During 1950

It was not necessary for the states to compensate any of the owners of the 5,233 cultivated ribes destroyed in connection with the 1950 control activities. Table 31 in the Appendix lists information on cultivated ribes compensation for all years.

Nursery Sanitation Work During 1950

Sanitation work was performed in the environs of ten nurseries in Connecticut, New York, and Pennsylvania. A total of 40 man days were spent examining 5,684 acres and 575 wild ribes were located and destroyed. There were 23,315,000 white pines in the ten nurseries worked.

The following table summarizes the results of the 1950 nursery sanitation work by states, while Tables 25 and 26 in the Appendix show the accumulative accomplishments and the present status of such activities.

Table 16 - Nursery Sanitation Work During 1950
(All Rework)

State	No. Nurseries Worked	Est. No. White Pines in Nurseries Worked	Acreage Worked	No. Ribes Destroyed (All Wild)	Total Man Days	No. Ribes per Acre	Acres Worked Per Man Day
Conn.	2	935,000	544	0	3	0	181.3
N.Y.	5	15,380,000	4,160	517	26	0.2	160.0
Penna.	3	7,000,000	980	58	11	0.1	89.1
Totals	10	23,315,000	5,684	575	40	0.1	142.1

Blister Rust Canker Elimination Work During 1950

Blister Rust canker elimination during the current year was restricted to state lands in 11 towns in New York where the pines had high aesthetic value. There was one small project in New Hampshire. A total of 21,261 white pines were examined and 517 fatally diseased trees were cut down. In addition, 390 branch infections and 76 stem cankers were removed from 400 other pines. A total of 161 man days were used in canker elimination work.

Status of Control Work on State and Private Lands

At the end of 1950 the control area on state and private lands totalled 11,134,709 acres, of which 4,006,830 acres support stands of white pine that meet the minimum stocking requirements for blister rust control. Nearly 80% of the control area has been detailed mapped but the extensive timber type changes caused in the past 13 years by two hurricanes, several large fires and greatly expanded logging, have made the original maps obsolete for a large part of this acreage. The first working has been extended to 95.3% of the control area and second working to 58.4%. The area now on maintenance is 48.6% of the regional total and includes all the control area in Connecticut, Rhode Island and New Jersey. The 1950 increase in area on maintenance was 612,481 acres.

Further reductions in the control area and white pine area acreages were made in 1950 as the mapping and remapping progressed. The control area dropped 202,665 acres and the pine area 45,387 acres. These follow the pattern of decreases during the past 11 years.

The following table gives the current status of control work in each state:

Table 17 - Status of Blister Rust Control Work on State and Private Lands
November 30, 1950

State	Total Acreage of Net Control Area	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked						Acreage on Main- tenance	Percentage of Net Control Area			
				Pre-Maintenance Work			All Main- tenance Work		Detail Mapped		Worked Once	Worked Twice	On Main- tenance	
				First Work	Second Work	Other Workings								
Maine	2,424,713	951,433	2,147,383	2,262,803	1,363,590	220,163	20,139	1,005,446	88.6	95.3	56.2	41.5		
N.H.	2,804,518	1,266,191	1,664,759	2,724,028	1,269,380	141,498	10,983	833,814	59.4	97.1	45.3	29.7		
Vt.	718,955	163,309	711,003	586,000	275,971	31,265	2,759	338,360	98.9	81.5	38.4	47.1		
Mass.	1,542,974	585,219	1,079,758	1,517,831	1,140,912	141,862	1,640	1,160,160	70.0	98.4	73.9	75.2		
R.I.	142,398	60,800	127,994	142,398	135,925	34,068	72,822	142,398	89.9	100.0	95.5	100.0		
Conn.	449,545	87,109	449,545	449,545	305,858	129,643	267,660	449,545	100.0	100.0	68.0	100.0		
N. Y.	2,481,202	773,490	2,081,816	2,393,436	1,706,363	787,535	252,685	1,100,099	83.9	96.5	68.8	44.3		
N.J.	16,742	3,771	-	16,742	1,417	-	-	16,742	0	100.0	8.5	100.0		
Penna.	553,662	115,508	540,179	514,244	297,078	68,612	43,962	355,740	97.6	92.9	53.7	64.3		
All States	11,134,709	4,006,830	8,802,437	10,607,027	6,496,494	1,554,646	672,650	5,402,304	79.1	95.3	58.3	48.6		

Although there were net reductions in control area and white pine area for the entire region during 1950, four states showed slight increases in control area and two of the same four had an increase in pine area.

	<u>Control Area</u>		<u>White Pine Area</u>	
	<u>Decreases</u> (Acres)	<u>Increases</u> (Acres)	<u>Decreases</u> (Acres)	<u>Increases</u> (Acres)
Maine	15,788	-	7,914	-
N. H.	32,356	-	17,074	-
Vt.	-	2,180	-	1,889
Mass.	-	7,636	-	10,384
R. I.	-	590	1,220	-
Conn.	-	330	2,208	-
N. Y.	109,943	-	19,244	-
Pa.	55,314	-	10,000	-
Region	202,665		45,387	

These figures show that the major changes in 1950 were increases in both control area and pine area in Vermont and Massachusetts with minor increases in control area in Rhode Island and Connecticut. In the other states decreases are recorded in both classes.

Table 17 (status) shows that New Hampshire and Massachusetts are considerably behind the other states in detail mapping; that Vermont has an appreciable unworked area; and New Hampshire, Maine, New York and Vermont in that order have the lower percentages on maintenance, all under the regional average of 48.6%. Compared with the status in 1949, mapping gains were not spectacular, with New York leading with 5%; New Hampshire second with 3.6%; Massachusetts with 2.9% and a regional gain of 2.6%. Increase in the coverage of unworked area was highest in Pennsylvania with 3.9%; Vermont second with 3.2%; New York third with 3.0% and the regional average of 1.6%. Increases in the acreage on maintenance were substantial with the greatest in Pennsylvania 13.9%; New York 9.4%; Vermont 5.9% and a 6.3% increase for the region.

Table 18 - Control Work Needed on State and Private Lands
(As of November 30, 1950)

State	Total Acreage of Net Control Area	Acreage in Net Control Area in Need of			Percentage of Net Control Area in Need of		
		Initial Detail Mapping	Pre-Maintenance Work		Initial Detail Mapping	Pre-Maintenance Work	
			First Work	Rework		First Work	Rework
Maine	2,424,713	277,330	161,910	1,257,357	11.4	6.7	51.9
N.H.	2,804,518	1,139,759	80,490	1,890,214	40.6	2.9	67.4
Vt.	718,955	7,952	132,955	247,640	1.1	18.5	34.4
Mass.	1,542,974	463,216	25,143	357,671	30.0	1.6	23.2
R.I.	142,398	14,404	-	-	10.1	0	0
Conn.	449,545	-	-	-	0	0	0
N.Y.	2,481,202	399,386	87,766	1,293,337	16.1	3.5	52.1
N.J.	16,742	16,742	-	-	100.0	0	0
Penna.	553,662	13,483	39,418	158,504	2.4	7.1	28.6
All States	11,134,709	2,332,272	527,682	5,204,723	20.9	4.7	46.7

The task of completing initial mapping is one of the big problems ahead. Such mapping is required on about 2 1/3 million acres. This figure may be somewhat excessive since there are large acreages in some states, eastern Massachusetts, for example, where control reached maintenance status without detailed mapping and it would be wasteful to perform intensive mapping on such acreages now. The same situation may exist in portions of other states. In addition to the initial mapping needs, there is remapping that must be performed on more than four million acres.

The acreage needing initial ribes eradication work is being reduced each year, although there is still the sizeable figure of 527,682 acres in this category with the largest acreages in Vermont, Pennsylvania and Maine. With new areas of reproduction developing adjacent to older or former stands and new pine plantations there will always be some initial work to be done.

The most pressing need involves rework which is required on 5,204,723 acres or nearly one-half the total net control area in the region. In addition, each year from now on, extensive acreages in the maintenance class will require examination to determine control needs in accordance with the ten-year examination-interval policy. It is clear that mapping and remapping, rework and maintenance work all combined, constitute a very large work program which can not be met adequately with the funds and personnel currently available.

Expenditures For Project BLR-3-1

State and local cooperative expenditures (direct aid) for Project BLR-3-1 during the calendar year 1950 totalled \$304,052.93 which was an increase of 0.3% as compared with the previous year. The following tabulation gives a comparison of such cooperative expenditures in each state during the past two years:

<u>State and Local Cooperative Expenditures For Project BLR-3-1</u>			
<u>State</u>	<u>1949</u>	<u>1950</u>	<u>% Increase or Decrease in 1950</u>
Maine	\$15,537.70	\$23,778.69	+53.0
N. H.	46,107.67	55,678.31	+20.8
Vt.	8,703.47	9,345.25	+ 7.4
Mass.	10,987.94	13,749.82	+25.1
R.I.	1,763.10	2,206.16	+25.1
Conn.	13,109.33	13,427.97	+ 2.4
N.Y.	179,250.65	157,931.05	-11.9
Penns.	27,572.64	27,935.68	+ 1.3
Total	\$303,032.50	\$304,052.93	+ 0.3

Seven of the eight states increased their state and local funds ranging from 53% in Maine to 1.3% in Pennsylvania. These helpful increases, however, were just about offset by the 11.9% reduction in the large state and cooperative program in New York.

For the third successive year, there was a decrease in federal expenditures for Project BLR-3-1. Such expenditures in 1950 amounted to \$111,754.15 as compared with \$146,381.36 in 1949, \$157,744.53 in 1948, and \$300,316.70 in 1947 or a decrease of 62.8% in three years. On the other hand direct aid by the states and their cooperators jumped from \$267,918.32 in 1947 to \$310,523.65 in 1948, 303,032.50 in 1949 to \$304,052.93 during the current year. As indicated in the following tabulation, direct aid furnished by the states and local cooperators in 1950 exceeded federal funds in all states except Vermont.

<u>Expenditures for Project BLR-3-1</u>				<u>% Total By</u>	
<u>During Calendar Year 1950</u>					
<u>State</u>	<u>Federal</u>	<u>States and Local Cooperators</u>	<u>Total</u>	<u>Federal</u>	<u>States and Local Cooperators</u>
Maine	\$18,369.69	\$ 23,778.69	\$42,148.38	43.6	56.4
N.H.	21,745.00	55,678.31	77,423.31	28.1	71.9
Vt.	15,152.69	9,345.25	24,497.94	61.9	38.1
Mass...	10,447.94	13,749.82	24,197.76	43.2	56.8
R.I. ..	591.17	2,206.16	2,797.33	0	100.0
Conn...	6,558.74	13,427.97	19,986.71	32.8	67.2
N.Y.	28,426.21	157,931.05	186,357.26	15.3	84.7
Penna..	12,236.23	27,935.68	40,171.91	30.5	69.5
Total	\$113,527.67	\$304,052.93	\$417,580.60	27.2	72.8

Difference in federal matching money was greatest in New York where direct aid totaled \$157,931.05 which was 455.5% more than federal W-E.14 expenditures in that state and even 41.3% more than federal expenditures for project BLR-3-1 in the entire region. Of the total expenditures during the calendar year, 68.7% was used for wages of temporary L/A laborers, 26.5% for non-labor expenses, 3.2% for purchase orders, and 1.6% for salaries of appointees.

The following table lists all expenditures and contributed services for Project BLR-3-1, by states, during the calendar year 1950.

Table 19 - Total Expenditures and Contributed Services for Work Project BLR-3-1 During Calendar Year 1950

State	State and Local Cooperative Expenditures and Contributed Services							Grand Total		
	Cash Expenditures				Value of Contributed Services		Total			
	State Funds	Towns	Counties	Indiv.	Sub-Total	State				
									Indiv. & Counties	
Maine	\$ 7,747.96	\$14,498.08	-	\$742.65	\$ 22,988.69	\$790.00	-	\$ 23,778.69	\$18,369.69	\$42,148.38
N.H.	14,620.38	38,425.56	-	346.48	53,392.42	2,285.89	-	55,678.31	21,745.00	77,423.31
Vt.	633.37	5,888.36	-	1,586.59	8,108.32	1,236.93	-	9,345.25	15,152.69	24,497.94
Mass.	9,495.38	1,824.40	-	810.04	12,129.82	1,620.00	-	13,749.82	10,447.94	24,197.76
R.I.	2,038.16	-	-	-	2,038.16	168.00	-	2,206.16	591.17	2,797.33
Conn.	8,361.69	3,245.44	-	-	12,107.13	1,320.84	-	13,427.97	6,558.74	19,986.71
N.Y.	122,431.83	-	21,203.30	86.00	143,721.13	13,369.92	340.00*	157,931.05	28,426.21	186,357.26
Penna.	26,825.26	-	-	-	26,825.26	1,110.42	-	27,935.68	12,236.23	40,171.91
All States	\$192,654.03	\$63,881.84	\$21,203.30	\$3,571.76	\$281,310.93	\$21,902.00	\$840.00	\$304,052.93	\$113,527.67	\$417,580.60

* County contribution.

** Includes Schreier's salary from Jan. 1 to June 30th.

Recapitulation of B.E. and P.Q. Expenditures for Project BLR-3-1 During Calendar Year 1950

State	Salaries of Appointees	L/A Expenditures			Purchase Orders	Total
		Wages of Laborers	Non-Labor Expenses	Total		
Maine	-	\$ 13,275.14	\$ 5,094.55	\$ 18,369.69	-	\$ 18,369.69
N.H.	-	16,319.18	4,531.01	20,850.19	\$ 894.81	21,745.00
Vt.	-	12,004.10	3,148.59	15,152.69	-	15,152.69
Mass.	-	8,608.88	1,839.06	10,447.94	-	10,447.94
R.I.	\$591.17	-	-	-	-	591.17
Conn.	1,182.35*	3,907.12	1,469.27	5,376.39	-	6,558.74
N.Y.	-	18,320.84	8,397.93	26,718.77	1,707.44	28,426.21
Penna.	-	5,569.74	5,691.26	11,261.00	975.23	12,236.23
All States	\$1,773.52	\$78,005.00	\$30,171.67	\$108,176.67	\$3,577.48	\$113,527.67

* Schreier's salary charged to Project WA-14 funds during period July 1 - December 31.

PART IV

BLISTER RUST CONTROL WORK ON NATIONAL FORESTS

FINANCIAL PROJECT BLR-4

No control work was performed on the three national forests (White Mountain, Green Mountain, and Allegheny) in this region during 1949 and 1950. None is deemed essential until the calendar year 1952 except a small job on the Allegheny National Forest which will be accomplished during 1951.

In 1950 a total of 208 acres of white pine with 800 acres of control were added to the Allegheny National Forest. The present net control area on the three national forests aggregate 9,108 acres. Initial work has been completed in the national forests in Maine, New Hampshire and Vermont, but there are 535 acres of unworked area in the Allegheny National Forest of Pennsylvania. This initial work is scheduled for 1951. Approximately 70% of the control areas have been worked twice.

The status of maintenance on the National Forests is as follows: Green Mountain 100%; White Mountain 82.6% and Allegheny 46.4%. Detailed information on the status of control work on each of these forests as well as accumulative accomplishments and expenditures are shown on pages 44 to 48 of our 1948 annual report. The 1948 data do not of course include the additional acreage of control work added to the Allegheny National Forest in 1950.

PART VBLISTER RUST CONTROL ON NATIONAL PARKSFINANCIAL PROJECT BLR-5

Control activities in cooperation with the National Park Service in this region are restricted to a project at Acadia National Park in Maine. The entire control area, comprising 16,872 acres, had been classified as being on maintenance by the end of 1945. Some maintenance work was performed in 1946 and 1947, but due to the small amount of ribes regrowth found on many of the areas, no further work was recommended for several years.

The control problem on this park was greatly complicated by the devastating forest fire of October, 1947 which burned over nearly 16,000 acres on Mount Desert Island including 8,600 acres, or 51% of the control area in the park. Recommendations were submitted to the Park Service officials that a systematic survey be made during the period May 15 - August 31, 1950 of the burned areas as well as a check of some of the adjacent unburned areas to determine their status. However, an examination of portions of the burned area during August, 1949 by District Leader Bradbury, K. K. Stimson, Superintendent Hadley, Regional Forester Moore, and three park rangers indicated that such a survey should be postponed until at least 1951. Only one area was found where there was much white pine reproduction which had developed since the fire. Considerable ribes regrowth was found in one area along the lower mountain slopes south of Sieur de Monts spring, but very few bushes were located in the other areas examined.

Detailed information on control accomplishments, status of control work, expenditures, etc. is given on Pages 49-51 of our 1948 annual report.

PART VI

APPENDIX

SUMMARIES FOR CALENDAR YEAR 1950

Total Expenditures by All Agencies, by States	44
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Control activities in the Northeastern Region during 1950 were restricted to work on state and private lands. Therefore, the summaries in Sections II and III of this report, except for expenditures, represent totals for the region and the data are omitted from this section of the Appendix. Results of important phases of the 1950 control activities have been summarized on the following pages:

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Current Status of Control Work:

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By Land Ownership Classes	57

Table 20- Total Expenditures For All Blister Rust Control Activities During Calendar Year 1950

State	Federal (All B.E. & P.O.)			States and Local Cooperators						Grand Total
	W.A.-14	W.E.-14	Total	States		Contributed Indiv- iduals	Towns	Counties	Total	
				Cash	Services					
Maine	\$21,168.23	\$18,369.69	\$39,537.92	\$8,537.96	\$500.00	\$742.65	\$14,498.08	-	\$24,278.69	\$63,816.61
N.H.	32,920.15	21,745.00	54,665.15	16,906.27	300.00	346.48	38,425.56	=	55,978.31	110,643.46
Vt.	16,816.21	15,152.69	31,968.90	1,870.30	530.00	1,586.59	5,888.36	-	9,875.25	41,844.15
Mass.	15,051.38	10,447.94	25,499.32	11,115.38	-	810.04	1,824.40	-	13,749.82	39,249.14
R.I.	=	591.17	591.17	2,206.16	120.00	=	=	-	2,326.16	2,927.33
Conn.	8,376.02	6,558.74	14,934.76	9,842.53	860.00	=	3,584.44	=	14,286.97	29,221.73
N.Y.	37,754.52	28,426.21	66,180.73	135,801.75	3,000.00	86.00	=	22,043.30	160,931.05	227,111.78
Penna.	14,841.75	12,236.23	27,077.98	27,935.68	385.00	=	=	-	28,320.68	55,398.66
Totals	\$146,928.26	\$113,527.67	\$260,455.93	214,216.03	\$5,695.00	3,571.76	\$64,220.84	22,043.30	\$309,746.93	\$570,202.86

* Includes \$340.00 value office space furnished by town.

Table 20 does not include \$48,822.65 Federal W-A.14 money expended for regional office.

Table 21 - Informational and Service Activities of District Blister Rust Control Leaders During Period 1922-1950, Inclusive

Informational Activities

State	Meetings Addressed		Radio Talks*	Items Published	Displays Placed
	Number	Attendance			
Maine	1,451	40,505	-	691	1,162
N.H.	4,209	241,348	-	4,727	2,290
Vt.	1,224	44,375	-	746	1,010
Mass.	1,116	58,507	1	2,191	880
R.I.	282	20,689	-	408	141
Conn.	173	6,277	1	648	204
N.Y.	2,368	189,610	4	3,075	881
Penna.	50	4,363	2	65	120
All States	10,873	605,674	8	12,551	6,688

* No record kept prior to 1949

Service Activities

State	Initial Interviews	Follow-up Calls	Persons Instructed in Field
Maine	39,248	15,126	24,165
N.H.	44,572	46,289	25,448
Vt.	17,165	14,415	10,635
Mass.	41,150	13,789	12,750
R.I.	4,180	3,370	775
Conn.	6,503	4,204	2,234
N.Y.	42,185	32,182	30,034
Penna.	3,138	635	4,011
All States	198,141	130,010	110,052

Table 22 - Local Cooperation on Blister Rust Control Work, 1918 to 1950, Inclusive
Individual Cooperation

State	No. Cooperators		Amount Spent By Individual Cooperators
	Ribes Erad.	Canker Elimin.	
Maine	11,106	25	\$ 86,097.13
N. H.	694	-	49,377.65
Vt.	2,362	12	76,867.45
Mass.	21,930	-	115,732.01
R. I.	8	-	581.36
Conn.	523	-	11,933.95
N. Y.	5,987	2	177,121.79
Penna.	303	-	2,273.36
All States	42,913	39	\$519,984.70

Town Cooperation

State	No. Town		Amount Town Money Expended
	Appropriations	Contributions	
Maine	1,180	20	\$ 199,619.51
N. H.	1,994	20	613,075.26
Vt.	232	64	67,409.56
Mass.	4	65	26,296.16
Conn.	149	51	38,104.56
N. Y.	29	3	9,422.78
All States	3,588	223	\$953,927.83

County Cooperation

State	No. County Appropriations or Allotments	Amount Spent by Counties
N. H.	6	\$1,724.08
N. Y.	150	174,213.65
All States	156	\$175,937.73

Table 23 - Control Area Examination and Mapping Work, 1933-1950, Inclusive

State	Total Acreage Reported Mapped*	Acreage Examined But Not Mapped*	Miles Boundary Lines Painted**	Total Man Days
Maine	2,522,913	5,001,929	1,808	38,681
N.H.	2,208,534	1,110,547	-	47,166
Vt.	1,712,749	4,538,734	828	24,536
Mass.	1,368,451	1,716,093	1,290	22,118
R.I.	313,229	154,889	-	3,173
Conn.	1,017,579	3,170,522	3,202	27,337
N.Y.	5,067,438	6,855,677	2,403	61,294
Penna.	1,135,772	872,215	7,369	46,369
All States	15,346,665	23,420,606	16,900	270,674

*Total Acreage Reported Mapped includes a large amount of remapping especially in Vermont, Connecticut, and New York. Also includes areas which were mapped and subsequently discontinued from the control area. Acreage Examined But Not Mapped was largely outside control area and data include two examinations in many instances.

** No record kept of this item after 1945.

Table 24 - Status of Control Area Mapping Work, November 30, 1950

State	Total Acreage of Present Net Control Area	Acreage Detail Mapped in Net Control Area	% Net Control Area Detail Mapped
Maine	2,442,741	2,148,539	88.0
N.H.	2,807,552	1,667,793	59.4
Vt.	719,528	711,516	98.9
Mass.	1,542,974	1,079,758	70.0
R.I.	142,398	127,994	89.9
Conn.	449,545	449,545	100.0
N.Y.	2,481,202	2,081,816	83.9
N.J.	16,742	0	0
Penna.	558,007	544,524	97.6
All States	11,160,689	8,811,485	79.0

Table 25 - Nursery Sanitation Work, 1930-1950, Inclusive

State	Type of Work	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre	
			Wild & Cult.	Cult. Only		Ribes	Man Days
Maine	Initial	206	103,538	22	163	502.6	.79
	Rework	1,529	10,819	-	300	7.1	.20
	Total	1,735	114,357	22	463	65.9	.27
N. H.	All Rework	3,055	7,826	1	285	2.6	.09
Vt.	" "	2,563	4,961	75	412	1.9	.16
Mass.	Initial	783	30,558	112	147	39.0	.19
	Rework	7,370	19,467	182	1,123	2.6	.15
	Total	8,153	50,025	294	1,270	6.1	.16
R. I.	Initial	1,780	725	565	167	0.4	.09
	Rework	18,156	4,970	184	277	0.3	.02
	Total	19,936	5,695	749	444	0.3	.02
Conn.	Initial	7,683	16,934	165	335	2.2	.04
	Rework	65,509	18,946	980	2,603	0.3	.04
	Total	73,192	35,880	1,145	2,938	0.5	.04
N. Y.	Initial	3,735	31,579	655	424	8.5	.11
	Rework	126,543	137,241	1,246	6,323	1.1	.05
	Total	130,278	168,820	1,901	6,747	1.3	.05
N. J.	Initial	795	2,114	114	109	2.7	.14
	Rework	1,050	765	-	19	0.7	.02
	Total	1,845	2,879	114	128	1.6	.07
Penna.	Initial	4,414	38,954	494	343 $\frac{1}{2}$	8.8	.08
	Rework	30,893	64,632	73	4,182 $\frac{1}{2}$	2.1	.14
	Total	35,307	103,586	567	4,526	2.9	.13
All States	Initial	19,396	224,402	2,127	1,688 $\frac{1}{2}$	11.6	.09
	Rework	256,668	269,627	2,741	15,524 $\frac{1}{2}$	1.1	.06
	Total	276,064	494,029	4,868	17,213	1.8	.06

Prior to 1930 results of nursery sanitation work were included with data for regular control activities.

Table 26 - Status of Nursery Sanitation Work, December 31, 1950

State	Nurseries Where Protection Established and Being Maintained				Acreage of Control Areas	No. Nurseries Protected During 1950	No. Additional Nurseries Which Established Zones But Now Abandoned
	Number						
	Federal	State	Private	Total			
Maine	-	1	1	2	473	-	5
N. H.	-	1	1	2	749	-	1
Vt.	-	1	-	1	333	-	-
Mass.	-	4	2	6	1,485	-	14
R. I.	-	-	-	-	-	-	6
Conn.	-	1	2	3	1,036	2	18
N. Y.	1	4	-	5	4,366	5	3
N. J.	-	1	-	1	600	-	1
Penn.	-	5	3	8	3,921	3	6
All States	1	18	9	28	12,963	10	54

Table 27 - List of Nurseries Maintaining Sanitation Zones in Northeastern Region
December 31, 1950

	Acreage of Sanitation Zone
<u>Maine</u>	
Western Maine Nursery - Fryeburg, Maine	311
State Nursery - Orono, Maine	162
	<u>473</u>
<u>New Hampshire</u>	
Keene Forestry Associates - Keene, N.H.	250
State Nursery - Boscaawen, N.H.	499
	<u>749</u>
<u>Vermont</u>	
State Nursery - Essex Junction, Vt.	333
<u>Massachusetts</u>	
Department of Conservation Nursery - Amherst, Mass.	225
Department of Conservation Nursery - Bridgewater, Mass.	100
Department of Conservation Nursery - Clinton, Mass.	150
Department of Conservation Nursery - Erving, Mass.	50
Kelsey Highlands Nursery - Boxford, Mass.	900
Weston Nursery - Weston, Mass.	60
	<u>1,485</u>
<u>Connecticut</u>	
Northeastern Forestry Company - Cheshire, Conn.	356
State Nursery - Barkhamstead, Conn.	492
Great Pond Nursery - Simsbury, Conn.	188
	<u>1,036</u>

Table 27 - List of Nurseries Maintaining Sanitation Zones in Northeastern Region
December 31, 1950 (continued)

	<u>Acreage of Sanitation Zone</u>
<u>New York</u>	
State Nursery - Saratoga Springs, N.Y. (old portion	705
(new portion	1,605
State Nursery - Lowville, N.Y.	1,150
N.Y. State College of Forestry Nursery - Syracuse, N.Y.	230
State Nursery (Division of Fish and Game) - Painted Post, N.Y.	206
Soil Conservation Service Nursery - Big Flats, N. Y.	470
	<u>4,366</u>
<u>New Jersey</u>	
State Nursery - Washington Crossing, N.J.,	600
<u>Pennsylvania</u>	
Clearfield State Nursery - Clearfield, Penna.	370
Greenwood State Nursery - Petersburg, Penna.	411
Mt. Alto State Nursery - Mt. Alto, Penna.	366
Rockview State Nursery - Pleasant Gap, Penna.	354
Howard State Nursery - Mt. Eagle, Penna.	215
Andorra Nursery - Chester Hill, Penna.	1,065
Fairview Nursery - Fairview, Penna.	559
Doyle Nursery - Seven Stars, Penna.	581
	<u>3,921</u>
<u>All States</u>	
28 Nurseries	12,963

Table 28 - Special Ribes Nigrum Elimination Work, 1928-1950, Inclusive - By States

State	No. Properties Inspected	No. Patches Located	No. Ribes Destroyed			Total Man Days
			Nigrum	Other Cult.	Total	
Mass.	750,359	6,657	42,629*	432	43,061	7,347
R.I.	110,137	1,917	16,219	1,093	17,312	1,929
Conn.	318,344	32,695**	7,464	42,397	49,861	14,610
N.Y.	526,593	5,128	37,064	761	37,825	5,250
All States	1,705,433	46,397	103,376	44,683	148,059	29,136

* Includes 556 bushes pulled in connection with special black currant elimination project around nurseries in 1925 and 1926.

** The survey in Connecticut included all cultivated ribes. It is estimated that the number of black currant patches in that state did not exceed 1500.

Table 29 - Status of Special Ribes Nigrum Elimination Work - December 31, 1950

State	Years Work Performed	Total Number Townships in State	No. Townships where Special Black Currant Elimination Work	
			Completed	Partially Completed
Mass.	1930-1940, Incl.	351*	342**	-
R. I.	1929-1933 "	39	39	-
Conn.	1930-1935 "	169	169	-
N. Y.	1928-1940 "	996	236	39
All States	-	1,555	786	39

* Four Massachusetts towns were abolished in connection with the construction of the Quabbin Water Supply Reservation.

** Nine additional townships on islands next to mainland will not be worked.

In the other states, Ribes nigrum have been eradicated in the worked portions of the control areas in conjunction with regular control activities. Very few black currants have been found in these states.

Table 30- Blister Rust Canker Elimination Work, 1932-1950, Inclusive

State	Ownership Class	Total Number Pines Examined	Number Fatally Infected Pines Cut Down	No. Additional Infected Pines From Which Cankers Removed	Total Number Cankers	Total Man Days
Maine	State & Private	95,207	7,950	12,091	19,901	713
	Acadia Nat. Park	61,572	3,376	9,924	32,336	2,476
	Total	156,779	11,326	22,015	52,237	3,189
N.H.	All State & Private	29,081	5,766	638	711	219
Vt.	"	272,593	40,924	21,389	25,264	3,047
Mass.	"	4,778,017	32,416	16,699	22,451	8,762
N.Y.	"	1,991,051	163,697	203,351	275,200	14,766
Penna.	"	919,698	32,670	130,020	569,029	7,312
All States	State & Private	8,085,647	283,423	384,188	912,556	34,819
	National Park	61,572	3,376	9,924	32,336	2,476
	Total	8,147,219	286,799	394,112	944,889	37,295

Table 31- State Compensation Paid For Cultivated Ribes Destroyed, 1918 to 1950, Inclusive

State	Total No. Cult. Ribes Destroyed	No. Bushes Paid For	% Bushes Paid For	No. Persons Paid Compensation	Amount Paid in Reimbursement	Average Amount Paid Per Bush
Maine	160,404	0	0	0	0	0
N.H.	161,479	2,008	1.2	63	\$550.60	\$.274
Vt.	18,476	1,646	8.9	133	792.91	.482
Mass.	333,096	42,098	12.6	674	15,029.75	.357
R.I.	41,943	1,410	3.4	58	509.79	.362
Conn.	90,700	175	0.2	16	103.50	.591
N.Y.	191,457	16,340	8.5	1,152	5,590.99	.342
N.J.	1,842	0	0	0	0	0
Penna.	62,659	517	0.8	71	167.75	.342
All States	1,062,056	64,194	6.0	2,167	\$22,745.29	\$.354

No federal money has been spent for ribes compensation.

Table 32 - Ribes Eradication Work, 1918-1950, Inclusive
By States

State	Type of Work	Gross Acreage Reported Worked	No Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acres Worked Per Man Day
					Ribes	Man Days	
Maine	First	2,563,769	47,349,933	262,875	18.5	.103	9.8
	Second	1,362,866	15,005,396	160,826	11.0	.118	8.5
	Other	241,190	442,943	5,624	1.8	.023	42.9
	Total	4,167,825	62,798,272	429,325	15.1	.103	9.7
N.H.	First	3,341,985	58,274,093	312,843	17.4	.094	10.7
	Second	1,378,871	14,077,173	136,969	10.2	.099	10.1
	Other	161,565	803,897	11,873	5.0	.073	13.6
	Total	4,882,421	73,155,163	461,685	15.0	.095	10.6
Vt.	First	676,177	12,816,249	131,472	19.0	.194	5.1
	Second	288,261	3,330,985	50,526	11.6	.175	5.7
	Other	36,092	155,765	3,279	4.3	.091	11.0
	Total	1,000,530	16,302,999	185,277	16.3	.185	5.4
Mass.	First	2,138,022	17,020,739	132,963	8.0	.062	16.1
	Second	1,297,438	6,260,082	100,781	4.8	.078	12.9
	Other	147,966	259,033	5,945	1.8	.040	24.9
	Total	3,583,426	23,539,854	239,689	6.6	.067	14.9
R.I.	First	330,050	269,502	21,251	0.8	.064	15.5
	Second	315,111	377,557	53,704	1.2	.170	5.9
	Other	90,248	19,180	2,928	0.2	.032	30.8
	Total	735,409	666,239	77,883	0.9	.106	9.4
Conn.	First	444,293	2,496,108	39,773	5.6	.090	11.2
	Second	446,647	4,888,040	92,929	10.9	.208	4.8
	Other	348,526	474,091	8,307	1.4	.024	41.9
	Total	1,239,466	7,858,239	141,009	6.3	.114	8.8
N.Y.	First	2,986,315	67,670,217	731,169	22.7	.245	4.1
	Second	1,818,323	14,296,683	231,413	7.9	.127	7.9
	Other	1,124,106	2,599,956	46,846	2.3	.042	24.0
	Total	5,928,744	84,566,856	1,009,428	14.3	.170	5.9
N.J.	First	16,742	49,493	1,324	3.0	.079	12.6
	Second	1,417	16,971	392	12.0	.277	3.6
	Total	18,159	66,464	1,716	3.7	.094	10.6
Penna.	First	746,061	33,991,424	333,393	45.6	.447	2.2
	Second	425,220	6,429,790	166,335	15.1	.391	2.6
	Other	129,061	373,050	6,247	2.9	.048	20.6
	Total	1,300,342	40,794,264	505,975	31.4	.389	2.6
All States	First	13,243,414	239,937,758	1,967,063	18.1	.149	6.7
	Second	7,334,154	64,682,677	993,875	8.8	.136	7.4
	Other	2,278,754	5,127,915	91,049	2.3	.040	25.0
	Total	22,856,322	309,748,350	3,051,987	13.4	.134	7.5

Table 33 - Ribes Eradication Work, 1918-1950, Inclusive
(By Land Ownership Classes)

Ownership Class	Type of Work	Gross Acreage Reported	Gross Acreage Worked	No. Ribes Destroyed (Wild & Cult.)	Total Man Days	Per Acre		Acreage Worked per Man Day
						Ribes	Man Days	
State and Privately Owned Lands	First	13,207,262		237,403,995	1,949,647	18.0	.148	6.8
	Second	7,305,111		64,199,799	986,816	8.8	.135	7.4
	Other	2,263,916		5,093,564	89,857	2.2	.040	25.2
	Total	22,776,289		306,697,358	3,026,320	13.5	.133	7.5
Acadia National Park	First	20,716		893,940	11,227	43.2	.542	1.8
	Second	18,159		59,356	4,450	3.3	.245	4.1
	Other	8,207		6,100	656	0.7	.080	12.5
	Total	47,082		959,396	16,333	20.4	.347	2.9
National Forests	White Mountain	First	9,529	817,694	2,957	85.8	.310	3.2
		Second	7,843	323,774	1,854	41.3	.236	4.2
		Other	5,317	11,238	253	2.1	.048	21.0
		Total	22,689	1,152,706	5,064	50.8	.223	4.5
	Green Mountain	First	458	3,298	31	7.2	.068	14.8
		Second	115	252	12	2.2	.104	9.6
		Total	573	3,550	43	6.2	.075	13.3
	Allegheny	First	5,449	818,831	3,201	150.3	.587	1.7
		Second	2,926	99,496	743	34.0	.254	3.9
		Other	1,314	17,013	283	12.9	.215	4.6
		Total	9,689	935,340	4,227	96.5	.436	2.3
	Total	First	15,436	1,639,823	6,189	106.2	.401	2.5
		Second	10,884	423,522	2,609	38.9	.240	4.2
		Other	6,631	28,251	536	4.3	.081	12.4
		Total	32,951	2,091,596	9,334	63.5	.283	3.5
All Classes	First	13,243,414		239,937,758	1,967,063	18.1	.149	6.7
	Second	7,334,154		64,682,677	993,875	8.8	.136	7.4
	Other	2,278,754		5,127,915	91,049	2.3	.040	25.0
	Total	22,856,322		309,748,350	3,051,987	13.4	.134	7.5

Table 34 - Ribes Eradication Work on Maintenance Areas, 1946-1950, Inclusive
(No separate record kept of such work prior to 1946)

State	Land Ownership Class	Acreage Worked	No. Ribes Destroyed		Total Man Days	Per Acre		Acres Worked Per Man Day
			Wild & Cult	Cult. Only		Ribes	Man Days	
Maine	State & Private	13,256	13,155	10	256	1.0	.019	51.8
	Acadia Nat. Park	8,829	1,162	-	247	0.1	.028	35.7
	Total	22,085	14,317	10	503	0.6	.023	43.9
N.H.	State & Private	11,094	37,727	131	304	3.4	.027	36.5
	White Mt. Nat. Forest	300	-	-	4	-	.013	75.0
	Total	11,394	37,727	131	308	3.3	.027	37.0
Vt.	All State & Private	2,759	7,085	-	84	2.6	.030	32.8
Mass.	"	1,350	3,737	-	55	2.8	.041	24.5
R. I.	"	75,439	12,791	166	1,338	0.2	.018	56.4
Conn.	"	269,082	370,733	-	4,834	1.4	.018	55.7
N.Y.	"	255,131	357,240	263	7,260	1.4	.028	35.1
Penna.	"	46,711	36,309	113	1,037	0.8	.022	45.0
All States	State & Private	674,822	838,777	683	15,168	1.2	.022	44.5
	National Forest	300	-	-	4	-	.013	75.0
	National Park	8,829	1,162	-	247	0.1	.028	35.7
	Total	683,951	839,939	683	15,419	1.2	.023	44.4

TABLE 35 - STATUS OF BLISTER RUST CONTROL WORK IN PRESENT NET CONTROL AREA IN NORTHEASTERN REGION BY STATES AND DISTRICTS
(November 30, 1950)

State	District	Total Acreage	Acreage of White Pine	Acreage Detail Mapped	Net Acreage Worked			Acreage in Control Area			Percentage of Control Area						In Need of Pre- Maintenance Work		
					Pre-Maintenance Work			Mainten- ance Work	Now on Maintenance Basis	Pre-Maintenance First Work	Rework	Detail Mapped	Worked			Main- tenance	On		
					First	Second	Other						Pre-Maintenance	Second	Other				
Maine	Bradbury	789,136	237,562	752,121	674,418	309,940	65,140	18,785	328,434	114,718	345,984	95.3	85.5	39.3	8.3	2.4	41.6	14.5	43.8
	Calderara	787,439	307,301	734,498	740,247	471,226	48,065	1,879	235,180	47,192	505,067	93.3	94.0	60.0	6.1	0.2	29.9	6.0	64.1
	Pike	866,166	410,138	661,920	866,166	594,168	112,365	2,703	459,202	0	406,964	76.4	100.0	68.6	13.0	0.3	53.0	0.0	47.0
	Totals for State	2,442,741	955,001	2,148,539	2,280,831	1,375,334	225,570	23,367	1,022,816	161,910	1,258,015	88.0	93.4	56.3	9.2	1.0	41.9	6.6	51.5
New Hampshire	Boomer	413,802	168,239	392,421	404,779	184,871	11,335	552	118,612	9,023	286,167	94.8	97.8	44.7	2.7	0.1	28.7	2.2	69.2
	Codman	294,621	144,207	236,314	282,751	184,334	44,661	6,929	141,500	11,870	141,251	80.2	96.0	62.6	15.2	2.4	48.0	4.0	47.9
	Conner	728,664	341,525	314,188	719,059	372,300	34,568	0	199,978	9,605	519,081	43.1	98.7	51.1	4.7	0.0	27.4	1.3	71.2
	Curtis	615,435	289,170	230,289	599,175	211,623	14,080	2,034	183,748	16,260	415,427	37.4	97.4	34.4	2.3	0.3	29.9	2.6	67.5
Vermont	Newman	247,688	125,208	133,913	247,465	129,566	28,856	0	55,008	223	192,457	54.1	99.9	52.3	11.7	0.0	22.2	0.1	77.7
	Richardson	507,342	198,822	360,668	473,833	189,670	10,381	1,768	137,932	33,509	335,901	71.1	93.4	37.4	2.0	0.3	27.2	6.6	66.2
	Totals for State	2,807,552	1,267,171	1,667,793	2,727,062	1,272,364	143,881	11,283	836,778	80,490	1,890,284	59.4	97.1	45.3	5.1	0.4	29.8	2.9	67.3
	Mulholland	224,102	46,083	224,042	159,472	89,380	7,809	0	37,657	64,630	121,815	99.9	71.2	39.9	3.5	0.0	16.8	28.8	54.4
Mass.	Palmer	187,977	44,836	187,297	148,881	48,455	5,231	28	115,372	39,096	33,509	99.6	79.2	25.8	2.8	0.0	61.4	20.8	17.8
	Rose	307,449	72,479	300,177	278,220	138,251	18,225	2,731	185,904	29,229	92,316	97.6	90.5	45.0	5.9	0.9	60.5	9.5	30.0
	Totals for State	719,528	163,398	711,516	586,573	276,086	31,265	2,759	338,933	132,955	247,640	98.9	81.5	38.4	4.3	0.4	47.1	18.5	34.4
	Brockway	513,507	231,543	475,634	490,716	318,213	17,887	25	308,229	22,791	182,487	92.6	95.6	62.0	3.5	0.0	60.0	4.4	35.5
R.I.	Dacre	429,372	131,354	342,681	428,203	358,766	101,783	1,615	261,703	1,169	166,500	79.8	99.7	83.6	23.7	0.4	61.0	0.3	38.8
	Perry	600,995	222,322	261,443	598,912	463,933	22,192	0	590,228	1,183	8,684	43.6	99.8	77.3	3.7	0.0	98.4	0.2	1.4
	Totals for State	1,542,974	585,219	1,079,758	1,517,831	1,140,912	141,862	1,640	1,160,160	25,143	357,671	70.0	98.4	73.9	9.2	0.1	75.2	1.6	23.2
	Schreier	142,398	60,800	127,994	142,398	135,925	34,068	72,822	142,398	0	0	89.9	100.0	95.5	23.9	51.1	100.0	0.0	0.0
Conn.	Miller	254,157	40,439	254,157	254,157	156,305	56,832	145,347	254,157	0	0	100.0	100.0	61.5	22.4	57.2	100.0	0.0	0.0
	Schreier	195,388	46,670	195,388	195,388	149,553	72,811	122,313	195,388	0	0	100.0	100.0	76.5	37.3	62.6	100.0	0.0	0.0
	Totals for State	449,545	87,109	449,545	449,545	305,858	129,643	267,660	449,545	0	0	100.0	100.0	68.0	28.8	59.5	100.0	0.0	0.0
	Barber	488,581	136,173	465,451	459,583	374,213	181,747	76,157	195,252	28,998	264,331	95.3	94.1	76.6	37.2	15.6	40.0	5.9	54.1
New York	Richards	153,770	26,719	12,395	142,826	60,674	2,461	7,792	58,435	10,944	84,391	8.1	92.9	39.5	1.6	5.1	38.0	7.1	54.9
	Charlton	183,390	49,459	183,390	182,500	135,965	61,965	13,479	99,560	890	82,940	100.0	99.5	74.1	33.8	7.3	54.3	0.5	45.2
	Harpp	650,166	301,722	631,890	639,575	559,791	336,786	110,251	374,113	10,591	265,462	97.2	98.4	86.1	51.8	17.0	57.5	1.6	40.8
	Beardsley	212,743	44,928	207,308	203,948	143,409	51,546	19,685	79,807	8,795	124,141	97.4	95.9	67.4	24.2	9.3	37.5	4.1	58.4
N.J.	Holcomb	238,482	68,844	201,892	232,742	182,882	95,825	22,115	75,915	5,740	156,827	84.7	97.6	76.7	40.2	9.3	31.8	2.4	65.8
	Sievers	291,625	71,322	223,455	275,545	102,560	14,003	0	139,790	16,080	135,755	76.6	94.5	35.2	4.8	0.0	47.9	5.5	46.6
	Woolschlaeger	262,445	74,323	156,035	256,717	146,869	43,202	3,215	77,227	5,728	179,490	59.5	97.8	56.0	16.5	1.2	29.4	2.2	68.4
	Totals for State	2,481,202	773,490	2,081,816	2,393,436	1,706,363	787,535	252,685	1,100,099	87,766	1,293,337	83.9	96.5	68.8	31.7	10.2	44.3	3.5	52.1
Penna.	Totals for State	16,742	3,771	0	16,742	1,417	0	0	16,742	0	0	0.0	100.0	8.5	0.0	0.0	100.0	0.0	0.0
	DeBerti	192,134	32,917	186,921	170,567	90,639	13,879	4,263	120,808	21,567	49,759	97.3	88.8	47.2	7.2	2.2	62.9	11.2	25.9
	Fatzinger	171,002	44,825	162,862	158,376	107,177	34,950	6,435	99,464	12,626	58,912	95.2	92.6	62.7	20.4	3.8	58.2	7.4	34.5
	Lilley	194,871	38,778	194,741	189,111	102,077	20,604	33,264	137,483	5,760	51,628	99.9	97.0	52.4	10.6	17.1	70.6	3.0	26.5
All States	Totals for State	558,007	116,520	544,524	518,054	299,893	69,433	43,962	357,755	39,953	160,299	97.6	92.8	53.7	12.4	8.0	64.1	7.2	28.7
	Totals for State	11,160,689	4,012,479	8,811,485	10,632,472	6,514,152	1,563,257	676,178	5,425,226	528,217	5,207,246	79.0	95.3	58.4	14.0	6.1	48.6	4.7	46.7

Table 37 - Total Expenditures For Blister Rust Control By All Cooperating Agencies
in Northeastern Region During Period 1918-1950, Inclusive

State		Maine	N.H.	Vt.	Mass.	R.I.	Conn.	N.Y.	N.J.	Penna.	All States
States and Local Cooperators	State	218,222.80	398,465.70	80,643.80	373,198.24	102,676.92	220,512.60	2,095,699.70	16,828.15	252,732.92	3,758,980.83
	Individuals	86,097.48	49,377.17	76,867.86	115,731.97	581.36	11,933.95	177,121.79	-	2,273.36	519,984.94
	Towns	199,619.43	613,075.70	67,409.20	26,296.76	-	38,444.12	9,422.78	-	-	954,267.99
	Counties	-	1,724.08	-	-	-	-	174,213.35	-	-	175,937.43
	Total	503,939.71	1,062,642.65	224,920.86	515,226.97	103,258.28	270,890.67	2,456,457.62	16,828.15	255,006.28	5,409,171.19
Federal Funds	Regular	B.P.I.	249,874.54	434,415.50	119,398.94	323,303.88	43,883.83	103,065.16	479,769.34	6,271.28	1,791,601.68
		B.E. & P.Q.	235,527.87	274,282.02	173,988.51	209,825.03	9,782.14	76,650.11	328,008.23	2,949.64	1,473,655.25
		W.A.-14	213,301.58	237,227.54	136,460.03	108,345.49	18,387.13	63,122.84	533,382.83	-	1,424,150.69
		W.E.-14	448,829.45	511,509.56	310,448.54	318,170.52	28,169.27	139,772.95	861,391.06	2,949.64	2,897,805.94
		Total	771.06	3,890.26	292.65	-	-	-	-	-	3,909.77
		Forest Service	23,593.51	-	-	-	-	-	-	-	5,598.08
		Park Service	723,068.56	949,815.32	430,140.13	641,474.40	72,053.10	242,838.11	1,341,160.40	9,220.92	317,692.01
		Sub-Total	355,610.43	149,340.77	95,905.47	64,503.64	111,845.63	177,053.96	774,782.95	346.50	895,066.17
	Emergency	C.C.C.	69,128.95	68,597.21	32,168.20	52,071.89	12,427.98	22,479.39	92,334.23	3,081.48	45,474.63
		P.W.A.	6,597.97	20,595.37	8,685.80	17,413.66	2,700.56	232,690.84	23,587.53	-	23,507.24
		W.P.A. (State)	649,730.75	632,428.87	402,140.28	407,457.56	48,258.65	83,153.99	1,132,151.77	7,303.37	455,814.65
		W.P.A. (F.A.)	-	-	-	31,134.08	-	5,938.10	-	-	37,072.18
		C.W.A.	1,426.80	-	-	10,998.20	-	94,478.40	2,779.70	-	109,683.10
		M.R.A.	-	-	-	-	1,640.00	1,152.71	8,010.58	-	4,254.65
		A.R.A.	-	-	-	-	5,797.19	-	9,087.87	230.25	9,613.27
		S.C.S.	-	-	-	-	-	812.40	-	-	220.80
		N.Y.A. & N.V.S.	1,082,494.91	870,962.22	538,899.75	583,579.03	182,670.01	616,947.39	2,043,547.03	10,961.60	1,433,951.41
		Sub-Total	1,805,563.47	1,820,777.54	969,039.88	1,225,053.43	254,723.11	859,785.50	3,384,707.43	20,182.52	1,751,643.42
	Total Federal Funds		2,309,503.18	2,883,420.19	1,193,960.74	1,740,280.40	357,981.39	1,30,676.17	5,841,165.05	37,010.67	2,006,649.70
Grand Total											17,500,647.49
Percentage of Total			13.2	16.5	6.8	9.9	2.0	6.5	33.4	0.2	11.5

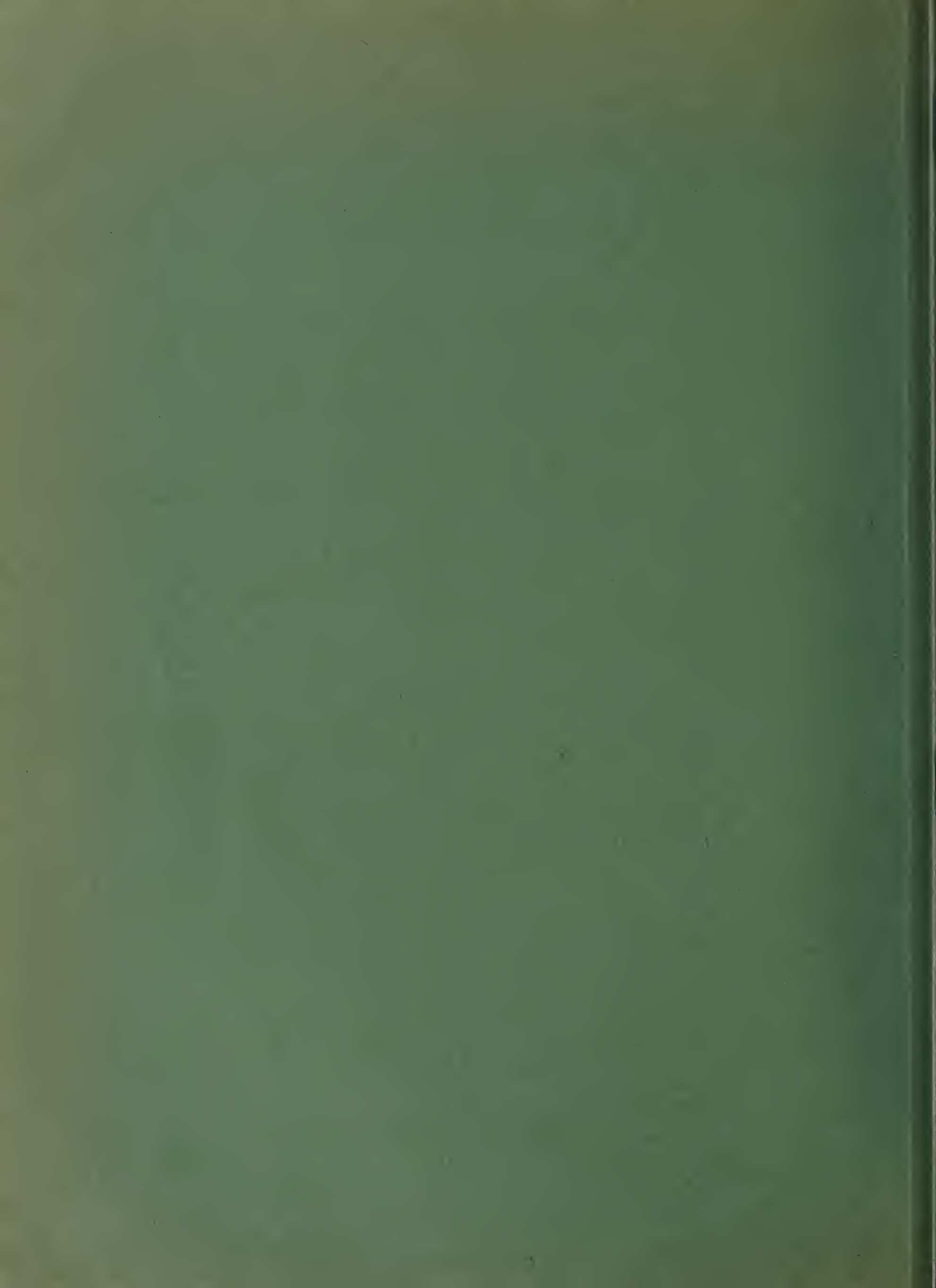
Table 37 does not include any expenditures for regional office. Such expenditures during the period July 1, 1935 to December 31, 1950 were as follows:
 B.E. and P.Q. funds - \$416,683.36; W.P.A. project funds - \$85,107.20; W.P.A. administrative funds - \$34,402.59; total - \$536,193.15. No record available at Greenfield of Bureau of Plant Industry and P.W.A. expenditures for regional office prior to July 1, 1935.



REPORT
on
WHITE PINE BLISTER RUST CONTROL
NORTH CENTRAL REGION
1950



UNITED STATES DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF ENTOMOLOGY AND PLANT QUARANTINE
DIVISION OF PLANT DISEASE CONTROL
NORTH CENTRAL REGIONAL OFFICE
P. O. Box No. 474
628 E. Michigan St.
Milwaukee, Wisconsin
January 1951



Report of
WHITE PINE BLISTER RUST CONTROL
NORTH CENTRAL REGION, 1950

by

Henry N. Putnam
Pathologist

and

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Highlights, Calendar Year 1950, North Central Region

Organization Matters:

In June the Michigan State Leader's office was moved from Lansing to Traverse City. This new Headquarters is close to the center of work now remaining in Michigan.

In the fall of 1950, Mr. Allison, State Leader of Michigan, was transferred to Greenfield, Mass., to become one of three Area Leaders of Control work in the Northeastern Region.

Mr. Nelson, former Area Leader in the Southern Area with headquarters at Columbus, Ohio, was transferred to the Michigan State Leader's position at Traverse City.

The Southern Area Leader's office was left unfilled, his stenographer, Mrs. Babich resigned, and leadership of the work in the Southern Area was transferred to Milwaukee office for special attention of Mr. Kroeber.

Control Work, 1950:

Considerably less acreage of Forest Service and Indian Service lands was covered in 1950 than in 1949. However, on state and private lands about 24,400 more acres were worked in 1950 than in 1949, offsetting losses on federal lands by more than 6,600 acres. This increase in the cooperative program was due to greatly increased Direct Aid from the States. Direct Aid in 1950 was larger than that in 1949 by over \$11,800. It was the largest annual contribution from states since the work started. On the other hand federal funds for work on state and private lands was much lower than usual. The cooperative dollar in 1950 was made up of 69 cents from States, and 31 cents from the Federal Government.

Value of Control Work in 1950:

In 1950 there were 51,809 acres of white pine given initial, second and third workings. While it is not possible to express accurately future white pine values saved by present control work, possible savings may be indicated. One way is to assume that initial working saves 70 percent, second working 30 percent, and third working 20 percent, of the expectation value. On this basis control work in 1950 saved over seven and a quarter million dollars of expected mature value, at a cost of about 3 percent of such value.

NORTH CENTRAL REGION

White Pine Being Protected: Natural: 966,580 Acres; Planted: 162,818 Acres;
Total: 1,129,398 Acres. Estimated Value: \$356,000,000.

Status of Control on December 31, 1950. (Net Acres)

I t e m	Forest Service (Acres)	Indian Service (Acres)	Nat. Park Service (Acres)	State and Private (Acres)	Total (Acres)	Percent of Total
W.P. in Control Area	174,048	77,605	179	877,566	1,129,398	-
Total Control Area	354,713	131,235	1,530	3,085,086	3,572,564	100.0
Worked Initially	283,014	125,416	120	2,579,486	2,988,036	83.6
Worked Twice	143,237	72,458	-	885,786	1,101,481	30.8
Worked More Than Twice	52,555	36,296	-	159,311	248,162	6.9
On Maintenance	184,122	86,172	-	1,119,018	1,389,312	38.9
Needing Initial Work	71,699	5,819	1,410	505,600	584,528	16.4
Needing Rework	98,892	39,244	120	1,460,468	1,598,724	44.8

Local Control, All Agencies (Gross Acres)

W o r k i n g	Acres	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected				Ribes Man- Days	
Calendar Year 1950						
Initial	18,795	57,711	653,186	4,215	11.3	0.09
Second	21,558	51,545	438,174	5,898	8.5	0.11
Third and Other	11,456	22,669	405,106	6,533	17.9	0.29
Total, 1950	51,809	131,925	1,496,466	16,646	11.3	0.13
Cumulative, 1917 to 1950						
Initial	1,075,872	3,502,935	223,802,105	887,953	63.9	0.25
Second	409,210	1,101,481	28,477,485	204,371	25.9	0.19
Third and Other	109,464	248,162	6,471,353	58,434	26.1	0.24
Total Cumulative	1,594,546	4,852,578	258,750,943	1,150,758	53.3	0.24

Blister Rust Infection: Found initially in 1950 on pine in Missaukee County, Michigan. No new counties on ribes. Known on pines and ribes in all seven states; on pine in 188 counties; on ribes in 390 counties of the 622 counties in the Region. Most severe in northern part.

Nursery Sanitation, 1950: Nurseries worked, one each in Indiana, Iowa, Michigan, 4 in Wisconsin. Cumulative: Ribes-free zones being maintained around 44 of the 88 nurseries originally protected.

Canker Pruning, 1950: 34,001 cankers removed from 25,453 trees; 8,059 infected trees removed. Cumulative: 210,603 cankers removed from 108,083 trees; 11,689 infected trees destroyed.

Surveying and Checking, 1950: 66,946 acres control area initially surveyed; 29,606 acres re-surveyed and 12,275 acres retained; 138,434 acres post-checked and 116,224 acres retained; 111,501 acres given regular check and 111,229 acres or 99.8 percent found satisfactory.

Cultivated Black Currant Elimination, 1950: None. Cumulative: 35,779 plantings, 295,365 plants found, 34,797 plantings, 288,758 plants destroyed.

Control Area Permits, 1950: 448 applications received in 4 States; 389 approved; 28 rejected; 31 voluntarily cancelled.

Motion Pictures, 1950: Regional film shown 201 times to 28,927 people. General film shown 94 times to 21,938 people.

Summary of White Pine Blister Rust Control - December 31, 1950

ILLINOIS

White Pine Being Protected: Natural: 231 Acres; Planted: 1,755 Acres;
Total: 1,986 Acres. Estimated Value: \$1,700,000

Status of Control (Net Acres)

I t e m	Non-Federal			Percent of Total
	Public (Acres)	Private (Acres)	Total (Acres)	
White Pine in Control Area	1,109	877	1,986	-
Total Control Area	6,203	7,226	13,429	100.0
Worked Initially	6,089	5,129	11,218	83.5
Worked Twice	7,104	3,104	10,208	76.0
Worked More Than Twice	7,669	5,420	13,089	97.5
On Maintenance	1,188	737	1,925	14.3
Needing Initial Work	114	2,097	2,211	16.5
Needing Rework	4,901	4,392	9,293	69.2

Local Control, All by Bureau-State (Gross Acres)

Working	Acres		Man- Days Used	Per Acre	
	White Pine Protected	Acres Worked		Ribes Destroyed	Man- Days

Calendar Year 1950

Initial	20	95	1,722	5	18.1	0.05
Second	3	10	1,127	4	112.7	0.40
Third and Other	74	417	19,374	136	46.5	0.33
Total, 1950	97	522	22,223	145	42.6	0.28

Cumulative, 1932 to 1950

Initial	3,360	20,151	1,506,825	3,884	74.8	0.19
Second	2,293	10,208	613,193	2,519	60.1	0.25
Third and Other	2,850	13,089	566,428	3,668	43.3	0.28
Total, Cumulative	8,503	43,448	2,686,446	10,071	61.8	0.23

Blister Rust Infection, 1950: No new counties on pines or ribes.

Cumulatively found in northern Illinois on pine in 7 counties; on ribes in 24 counties, out of 102 counties in state.

Nursery Sanitation, 1950: None. Sanitation zones being maintained around 4 of 8 nurseries originally protected.

Surveying and Checking, 1950: 272 acres control area initially surveyed; 195 acres re-surveyed, none retained; 152 acres post-checked, and 107 acres retained; 357 acres given regular check after ribes eradication and found satisfactory.

Cultivated Black Currant Elimination, 1950: None. Cumulative: 532 plantings, 4,171 plants found; 60 plantings, 761 plants destroyed.

Summary of White Pine Blister Rust Control - December 31, 1950

INDIANA

White Pine Being Protected: Natural: 323 Acres; Planted: 9,922 Acres;
Total: 10,245 Acres. Estimated Value \$8,000,000

Status of Control (Net Acres)

I t e m	Forest	Non-Federal		Total (Acres)	Percent of Total
	Service (Acres)	Public (Acres)	Private (Acres)		
W. P. in Control Area	18	3,169	7,058	10,245	-
Total Control Area	179	18,858	72,852	91,889	100.0
Worked Initially	179	17,971	60,582	78,732	85.7
Worked Twice	-	9,111	14,968	24,079	26.2
Worked More Than Twice	-	6,337	5,705	12,042	13.1
On Maintenance	179	14,407	46,918	61,504	66.9
Needing Initial Work	-	887	12,270	13,157	14.3
Needing Re-Work	-	3,564	13,664	17,228	18.7

Local Control, All by Bureau-State (Gross Acres)

Working	Acres		Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected	Acres Worked			Ribes	Man- Days

		<u>Calendar Year 1950</u>				
Initial	646	3,059	36,447	101	11.9	0.03
Second	426	2,409	11,189	77	4.6	0.03
Third and Other	373	3,213	10,390	85	3.2	0.03
Total, 1950	1,445	8,681	58,026	263	6.7	0.03

		<u>Cumulative, 1933 to 1950</u>				
Initial	9,823	93,126	475,924	4,040	5.1	0.04
Second	4,496	24,079	103,627	1,121	4.3	0.05
Third and Other	1,707	12,042	35,463	356	2.9	0.03
Total, Cumulative	16,026	129,247	615,014	5,517	4.8	0.04

Blister Rust Infection, 1950: No new counties. Cumulative: On pine in 3 counties; on ribes in 53 counties of the 92 counties in the State.

Nursery Sanitation: Jasper, Pulaski worked in 1950. Sanitation zones maintained around 2 of the 6 nurseries originally protected.

Canker Pruning, 1950: None. Cumulative: 11 cankers removed from 8 trees.

Surveying and Checking, 1950: 1,729 acres control area initially surveyed; 1,898 acres re-surveyed and 998 acres retained; 7,382 acres post-checked and 6,689 acres retained; 4,864 acres given regular check after eradication and all but 205 acres found satisfactory.

Cultivated Black Currant Elimination, 1950: None. Cumulative: 5 plantings. 20 plants found; 3 plantings, 15 plants destroyed

Summary of White Pine Blister Rust Control - December 31, 1950

IOWA

White Pine Being Protected: Natural: 714 Acres; Planted: 5,221 Acres;
Total: 5,935 Acres. Estimated Value: \$11,000,000 -- chiefly
as shelterbelts.

Status of Control (Net Acres)

I t e m	Indian	Non-Federal		Total (Acres)	Percent of Total
	Service (Acres)	Public (Acres)	Private (Acres)		
W. P. in Control Area	45	579	5,311	5,935	-
Total Control Area	500	3,568	46,433	50,501	100.0
Worked Initially	500	3,516	30,541	34,557	68.4
Worked Twice	206	2,331	4,999	7,536	14.9
Worked More Than Twice	-	1,406	388	1,794	3.6
On Maintenance	-	58	18,793	18,851	37.3
Needing Initial Work	-	52	15,892	15,944	31.6
Needing Re-Work	500	3,458	11,748	15,706	31.1

Local Control, All Agencies (Gross Acres)

Working	Acres	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected				Ribes	Man- Days

Calendar Year 1950

Initial	45	254	40,834	176	160.8	0.69
Second	35	128	29,474	114	230.3	0.89
Third and Other	65	214	21,062	135	98.4	0.63
Total, 1950	145	596	91,370	425	152.3	0.71

Cumulative 1933 to 1950

Initial	3,455	39,228	3,605,969	27,381	91.9	0.70
Second	1,108	7,536	715,197	5,331	94.9	0.71
Third and Other	552	1,794	148,127	1,454	82.6	0.81
Total, Cumulative	5,115	48,558	4,469,293	34,166	92.0	0.70

Blister Rust Infection, 1950: No new counties. Cumulative: On pines in
9 counties in northeast; on ribes in 56 of the 99 counties in the State.

Nursery Sanitation, 1950: State Forest Nursery again worked. Ribes-free
zones maintained around 7 of the 9 nurseries originally protected.

Canker Pruning, 1950: 82 cankers removed from 50 trees; 23 infected trees
destroyed. Cumulative: 1,951 cankers removed from 723 trees; 734 in-
fected trees destroyed.

Surveying and Checking, 1950: 435 acres control area initially surveyed.
596 acres checked after eradication and found satisfactory.

Cultivated Black Current Elimination, 1950: None. Cumulative: 1,611
plantings, 7,331 plants found; 1,606 plantings, 7,310 plants destroyed.

MICHIGAN

White Pine Being Protected: Natural: 316,463 Acres; Planted: 79,504 Acres;
Total: 395,967 Acres. Estimated Value: \$120,000,000

Status of Control (Net Acres)

I t e m	Forest	Nat. Park	Non-Fed.		Total	Percent of Total
	Service (Acres)	Service (Acres)	Public (Acres)	Private (Acres)		
W.P. in Control Area	63,084	179	123,146	209,558	395,967	-
Total Control Area	166,709	1,530	300,353	716,295	1,184,887	100.0
Worked Initially	165,359	120	282,936	626,529	1,074,944	90.7
Worked Twice	65,890	-	128,533	251,813	446,236	37.7
Worked More Than Twice	29,061	-	27,476	50,573	107,110	9.0
On Maintenance	118,990	-	150,710	217,844	487,544	41.1
Needing Initial Work	1,350	1,410	17,417	89,766	109,943	9.3
Needing Re-Work	46,369	120	132,226	408,685	587,400	49.6

Local Control, All Agencies (Gross Acres)

Working	Acre White Pine Protected	Acre Worked	Ribes Destroyed	Man- Days Used	Per Ribes	Acre Man- Days
	Calendar Year 1950					
Initial	3,332	11,118	68,466	643	6.2	0.06
Second	8,865	18,280	85,247	859	4.7	0.05
Third and Other	4,669	9,104	74,259	1,459	8.2	0.16
Total, 1950	16,866	38,502	227,974	2,961	5.9	0.08
Cumulative, 1928 to 1950						
Initial	440,954	1,340,931	65,485,451	280,994	48.8	0.21
Second	167,260	446,236	8,267,849	55,725	18.5	0.12
Third and Other	44,044	107,110	1,214,099	12,744	11.3	0.12
Total, Cumulative	652,258	1,894,277	74,967,399	349,463	39.6	0.18

Blister Rust Infection, 1950: On pine in one county, Missaukee. Cumulative:
On pines in 53 counties; on ribes in all of the 83 counties in State.
Particularly severe in Upper Michigan.

Nursery Sanitation, 1950: Beal, Michigan State College nursery reworked.
Cumulative: Ribes-free zones maintained around 8 of the 14 nurseries
originally protected.

Canker Pruning, 1950: None. Cumulative: 102,176 cankers removed from 41,691
trees; 297 infected trees destroyed.

Surveying and Checking, 1950: 11,265 acres control area initially surveyed;
4,653 acres resurveyed and 2,442 acres retained; 73,419 acres post-checked
and 63,146 acres retained; 38,502 acres checked after eradication and
found satisfactory.

Cultivated Black Currant Elimination, 1950: None. Cumulative: 14,931
plantings, 147,849 plants found; 14,864 plantings, 147,195 plants destroyed.

Control Area Permits, 1950: 116 applications received; 73 approved; 18
rejected and 25 voluntarily cancelled.

MINNESOTA

White Pine Being Protected: Natural 226,222 Acres; Planted: 12,350 Acres;
Total: 238,572 Acres. Estimated Value: \$75,000,000

Status of Control (Net Acres)

I t e m	Forest	Indian	Non-Fed.				Percent
	Service (Acres)	Service (Acres)	Public (Acres)	Private (Acres)	Total (Acres)	Total	of Total
W.P. in Control Area	77,322	21,925	53,766	85,559	238,572	-	
Total Control Area	124,508	32,354	112,064	272,204	541,130	100.0	
Worked Initially	55,869	32,145	74,397	204,518	366,929	67.8	
Worked Twice	28,058	27,483	22,877	46,449	124,867	23.1	
Worked More Than Twice	13,159	19,822	5,814	1,917	40,712	7.5	
On Maintenance	30,465	24,513	24,071	36,272	115,321	21.3	
Needing Initial Work	68,639	209	37,667	67,686	174,201	32.2	
Needing Re-Work	25,404	7,632	50,326	168,246	251,608	46.5	

Local Control, All Agencies (Gross Acres)

Working	Acres	Acres		Man-	Per	Acres
	White Pine Protected	Worked	Ribes Destroyed	Days Used	Ribes	Man- Days
<u>Calendar Year 1950</u>						
Initial	472	817	73,453	723	89.9	0.88
Second	1,467	2,952	132,122	1,570	44.8	0.53
Third and Other	1,506	2,291	90,326	1,880	39.4	0.82
Total, 1950	3,445	6,060	295,901	4,173	48.8	0.69
<u>Cumulative, 1917 to 1950</u>						
Initial	177,441	425,565	62,108,057	168,363	145.9	0.40
Second	64,739	124,867	8,370,603	46,375	67.0	0.37
Third and Other	27,127	40,712	2,651,304	20,217	65.1	0.50
Total, Cumulative	269,307	591,144	73,129,964	234,955	123.7	0.40

Blister Rust Infection, 1950: None. Cumulative: On pines in 38 counties; on ribes in 38 of the 87 counties in the State. Rust prevalent in all pine growing counties, and especially severe in northeastern Minnesota.

Nursery Sanitation, 1950: None. Cumulative: Ribes-free zones maintained around 6 of the 17 nurseries originally protected.

Canker Pruning, 1950: 8,622 cankers removed from 6,389 trees; 3,825 infected trees destroyed. Cumulative: 79,940 cankers removed from 46,042 trees; 6,434 infected trees destroyed.

Surveying and Checking, 1950: 1,499 acres control area initially surveyed; 17,922 acres resurveyed and 7,021 acres retained; 10,981 acres post-checked, and 6,710 acres retained; 6,054 acres checked after eradication, and all but 67 acres found satisfactory.

Cultivated Black Current Elimination, 1950: None. Cumulative: 3,261 plantings, 23,309 plants found and destroyed.

Control Area Permits, 1950: 108 applications received; 101 approved; 4 rejected; 3 voluntarily cancelled.

Summary of White Pine Blister Rust Control - December 31, 1950

OHIO

White Pine Being Protected: Natural: 3,158 Acres; Planted: 17,983 Acres;
Total: 21,141 Acres. Estimated Value: \$18,000,000

I t e m	Status of Control (Net Acres)				Percent of Total
	Forest Service (Acres)	Non-Federal Public (Acres)	Private (Acres)	Total (Acres)	
W.P. in Control Area	515	7,987	12,639	21,141	-
Total Control Area	4,029	53,114	156,231	213,374	100.0
Worked Initially	4,029	42,558	131,911	178,498	83.7
Worked Twice	-	20,338	32,002	52,340	24.5
Worked More Than Twice	-	4,770	11,374	16,144	7.6
On Maintenance	4,029	16,125	67,745	87,898	41.2
Needing Initial Work	-	10,556	24,320	34,876	16.3
Needing Re-Work	-	26,434	64,166	90,600	42.5

Local Control, All Bureau-State (Gross Acres)

Working	Acres	Acres Worked	Ribes Destroyed	Man- Days Used	Per Acre	
	White Pine Protected				Ribes	Man- Days
Calendar Year 1950						
Initial	432	1,659	4,302	31	2.6	0.02
Second	432	1,941	497	11	0.3	0.01
Third and Other	400	1,034	3,665	29	3.5	0.03
Total, 1950	1,264	4,634	8,464	71	1.8	0.02
Cumulative, 1933 to 1950						
Initial	17,168	211,432	2,574,668	33,038	12.2	0.16
Second	6,500	52,340	724,371	12,444	13.8	0.24
Third and Other	3,504	16,144	173,786	2,450	10.8	0.15
Total, Cumulative	27,172	279,916	3,472,825	47,932	12.4	0.17

Blister Rust Infection, 1950: No new counties. Cumulative: On pines in 10 counties; on ribes in 65 counties, of the 88 counties in the State.

Nursery Sanitation, 1950: None. Cumulative: Ribes-free zones maintained around 7 of the 16 nurseries originally protected.

Canker Pruning, 1950: None. Cumulative: 126 cankers removed from 44 trees; 3 infected trees destroyed.

Surveying and Checking, 1950: 2,341 acres control area initially surveyed; 3,003 acres resurveyed, and 957 acres retained; 8,600 acres post-checked and 6,102 acres retained; 1,774 acres given regular check after eradication and found satisfactory.

Cultivated Black Currant Elimination, 1950: None. Cumulative: 8,838 plantings, 75,605 plants found; 8,406 plantings, 73,117 plants destroyed.

Control Area Permits, 1950: 9 applications received; 4 approved, and 5 rejected.

Summary of White Pine Blister Rust Control, December 31, 1950

WISCONSIN

White Pine Being Protected: Natural: 419,469 Acres; Planted: 36,083 Acres;
Total: 455,552 Acres. Estimated Value: \$133,000,000

I t e m	Status of Control (Net Acres)				Total (Acres)	Percent of Total
	Forest Service (Acres)	Indian Service (Acres)	Non-Fed. Public (Acres)	Private (Acres)		
W.P. in Control Area	33,109	55,635	104,090	262,718	455,552	-
Total Control Area	59,288	98,381	291,909	1,027,776	1,477,354	100.0
Worked Initially	57,578	92,771	289,543	803,266	1,243,158	84.1
Worked Twice	49,289	44,769	93,148	249,009	436,215	29.5
Worked More Than Twice	10,335	16,474	14,528	15,934	57,271	3.9
On Maintenance	30,459	61,659	173,173	350,978	616,269	41.7
Needing Initial Work	1,710	5,610	2,366	224,510	234,196	15.9
Needing Re-Work	27,119	31,112	116,370	452,288	626,889	42.4

Local Control, All Agencies (Gross Acres)						
Working	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man- Days Used	Per Ribes	Acres Man- Days
Calendar Year 1950						
Initial	13,848	40,709	427,962	2,536	10.5	0.06
Second	10,330	25,825	178,516	3,263	6.9	0.13
Third and Other	4,369	6,396	186,030	2,809	21.9	0.44
Total, 1950	28,547	72,930	792,508	8,608	10.9	0.12
Cumulative, 1917 to 1950						
Initial	423,671	1,372,502	88,045,211	370,253	64.1	0.27
Second	162,814	436,215	9,682,645	30,856	22.2	0.19
Third and Other	29,680	57,271	1,682,146	17,545	29.4	0.31
Total, Cumulative	616,165	1,865,988	99,410,002	468,654	53.3	0.25

Blister Rust Infection, 1950: No new counties. Cumulative: On pines in 68 counties; on ribes in all of the 71 counties in the State.

Nursery Sanitation, 1950: Three state and one private nursery worked. Cumulative: Ribes-free conditions maintained around 10 of the 18 nurseries originally protected.

Canker Pruning, 1950: 25,297 cankers removed from 19,014 trees; 4,211 infected trees cut down. Cumulative: 26,399 cankers removed from 19,575 trees; 4,211 infected trees cut down.

Surveying and Checking, 1950: 49,401 acres of control area initially surveyed; 1,935 acres resurveyed and 857 acres retained; 37,894 acres post-checked, and 33,470 acres retained; 59,354 acres checked after eradication and found satisfactory.

Cultivated Black Current Elimination, 1950: None. Cumulative: 6,601 plantings, 37,080 plants found; 6,597 plantings, 37,051 plants destroyed.

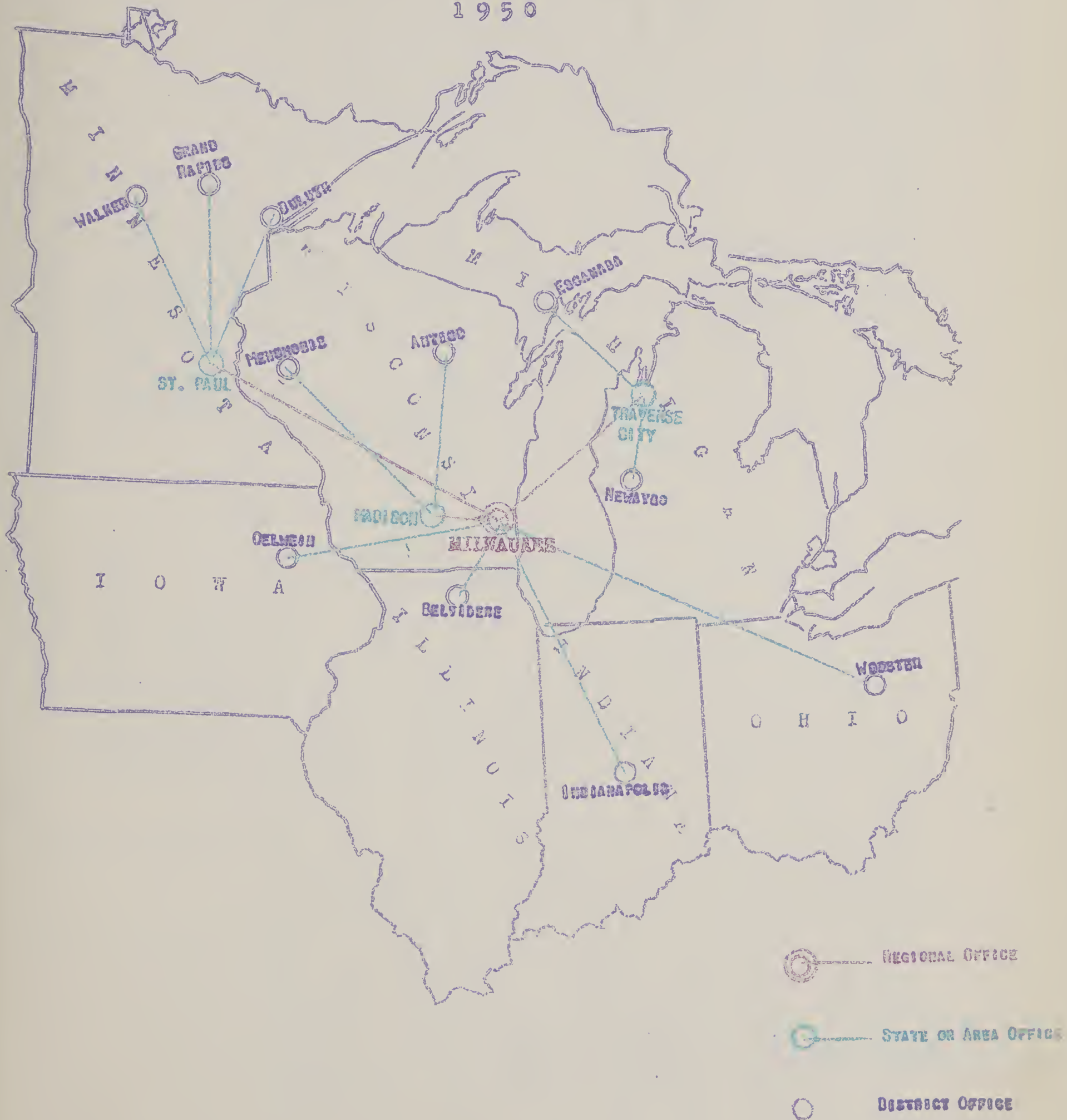
Control Area Permits, 1950: 215 applications received; 211 approved, 1 rejected, 3 voluntarily cancelled.

CHART 1

LOCATION OF BLISTER RUST CONTROL OFFICES

NORTH CENTRAL REGION

1950



ORGANIZATION CHART, NORTH CENTRAL REGION, AS OF DECEMBER 31, 1950

REGIONAL OFFICE

MILWAUKEE, WISCONSIN

REGIONAL LEADER

ASSISTANT REGIONAL LEADER

ADMINISTRATIVE ASSISTANT

AUDIT CLERK

CLERK

CLERK-STENOGRAPHER

CLERK-STENOGRAPHER

HENRY N. PUTNAM

JOHN K. KROEBER

CHARLES T. GEISER

WILLIAM F. BENZ

EDWINA D. COLBO

MARIE L. MAURER

MAE V. NILSEN

SOUTHERN AREA

MILWAUKEE, WISCONSIN

AREA LEADER -

JOHN K. KROEBER

MICHIGAN

TRAVERSE CITY

STATE LEADER -

L. E. NIELSEN

CLERK-STENOGRAPHER -

LOUIS PEPLINSKI (A)

WISCONSIN

MADISON

STATE LEADER -

T. F. KOUGA

CLERK-STENOGRAPHER -

A. M. GALLAGHER

DRAFTSMAN (A) -

H. F. WILLIAMS

MINNESOTA

ST. PAUL

STATE LEADER -

L. B. RITTER

CLERK-STENOGRAPHER - (A)

E. SQUILLACE

ILLINOIS

DELYDERS

FIELD SUPERVISOR - (A)

E. O. BERGESON

UPPER MICHIGAN

ESCARABA

DISTRICT LEADER -

W. D. MILLER

FIELD SUPERVISOR -

S. M. SAGER

FIELD SUPERVISOR - (A)

A. J. VERVILLE

EASTERN DISTRICT

ANTIGO

DISTRICT LEADER -

R. WIGDER

FIELD SUPERVISOR (A) -

E. O. HILL

EASTERN DISTRICT

DULUTH

DISTRICT LEADER -

D. M. STEWART

CLERK-STENOGRAPHER (A) -

VACANCY

INDIANA

BLOOMINGTON

FIELD SUPERVISOR - (A)

E. P. VAN ARSDEL

LOWER MICHIGAN

NEWAYGO

DISTRICT LEADER -

R. I. THOMPSON

FIELD SUPERVISOR (A) -

VACANCY

WESTERN DISTRICT

MEMPHONIE

DISTRICT LEADER -

E. W. CLEASBY

FIELD SUPERVISOR -

A. W. DEPTA

WESTERN DISTRICT

WALKER

DISTRICT LEADER -

J. M. LIGGE

IOA

OELVEIN

FIELD SUPERVISOR -

R. G. HAYES

SOUTHERN DISTRICT

GRAND RAPIDS

DISTRICT LEADER -

W. R. DOWELL

OHIO

COLUMBUS

FIELD SUPERVISOR -

R. G. DOWELL

(A) -- PAID FROM STATE FUNDS.

Foreword

As initiated in 1942, the organization of the 1950 Report follows the same pattern. It is divided into four main parts, so arranged that separates will be available covering control work on National Forests and Indian Reservations to these respective agencies. The four divisions are listed below:

(1) BLR-1-3. Leadership, Coordination and Technical Direction. This includes summaries, general narrative section, and tables covering all activities. Local control work is included for completeness.

(2) BLR-3-3. Cooperative Blister Rust Control on State and Privately Owned Lands. This includes tables and a discussion by States of work done and status of control on lands in non-federal public and private ownership.

(3) BLR-4. Blister Rust Control Operations on National Forests. This includes tables and discussions of work done and status of control on each of the 11 white pine growing National Forests in this Region.

(4) BLR-7. Blister Rust Control Operations on Indian Reservations. This includes tables and discussions of work done and status of control on each of the 11 Indian Reservations producing white pine in this Region.

BLR-1-3. Leadership, Coordination and Technical Direction of
White Pine Blister Rust Control, North Central Region

Organization

Permanent Organization

The permanent organization as of December 31, 1950, is shown in the accompanying chart. Several changes in the organization took place during the Calendar Year 1950. Details of these changes are as follows:

Mrs. Lorraine Z. Heise, Clerk-Stenographer, Milwaukee Office, resigned effective January 10, 1950.

Mrs. Ethel R. Parker, Clerk-Stenographer, Lansing, Michigan, Office, resigned September 1, 1950, to enter a retirement status.

Mrs. Rena J. Babich, Clerk-Stenographer, Columbus, Ohio, resigned December 6, 1950.

Mr. Gerald J. Sullivan was appointed, effective January 3, 1950, for a limited period as (Agent) Field Assistant, GS-4, with headquarters at Duluth, Minnesota, and terminated at the close of business on April 15, 1950.

Mr. Glenn R. Allison, State Leader of Michigan, with headquarters at Traverse City, transferred to an Area Leader's job in the Northeastern Region with headquarters at Greenfield, Massachusetts, effective October 30, 1950.

Mr. Leiton E. Nelson, Area Leader of our Southern Area, with headquarters at Columbus, Ohio, transferred to Traverse City, Michigan, to take up the duties of State Leader in Michigan, effective November 20, 1950.

Mr. Robert G. Hayes, (Agent) Field Supervisor, with headquarters at Oelwein, Iowa, transferred to the Barberry Project for the period October 1 to December 9, 1950.

Mr. Robert G. Doerner, (Agent) Field Supervisor, with headquarters at Columbus, Ohio, was assigned for duty with the Barberry Project for the period November 12 to 25.

Mr. David P. Wadsworth who had served for a period of ten years, three months and twenty days during the period May, 1937, to October, 1950, paid from State funds and assigned to the Blister Rust Project, died November 16, 1950.

Labor Conditions

Labor for eradication crews in 1950 was largely obtained from the vicinity of each job and transported to work either by privately owned automobiles operated at no expense to the Government, or, in some cases, by Government cars. Labor was generally more available than in recent years. It was possible to be selective, and to employ a high proportion of experienced workers. Young men, mostly forestry students, were employed particularly in Forest Service camps on the Superior National Forest, Minnesota. Indian women continued to be used as labor on Indian reservations, although the proportion of them to men was lower in 1950.

Wage Board rates were 85¢ for unskilled labor; 95¢ for scout-checkers; \$1.05 - \$1.15 for Straw Boss and \$1.20 for foreman-scout per hour.

Man-Months Employment

There were employed in 1950 approximately 1,393 man-months (Table 13) compared with 1,445 in 1949 and 1,581 in 1948. In comparison with 1949 there were increases in man-months employed on state and private funds from 304 to 377; on the Forest Service program, a decrease from 402 to 369; and on the Indian Service program from 380 to 289 man-months. There was a reduction on Bureau Administrative Funds from 249 to 245; and on Bureau Cooperative Funds an increase from 110 to 112 man-months, a net reduction of 2 man-months, due to decreased Bureau funds in Fiscal Years 1950 and 1951.

Automotive Equipment

One 1950 Ford 4-door sedan, ordered in 1949, was delivered February 6, 1950. During the year we disposed of two passenger cars and fourteen trucks. At the end of 1950 we had twelve passenger cars and twenty-two trucks on hand.

Passenger Cars - Calendar Year 1950

State	Make	Year Model	Body Type	Tag #	Life Mileage 12/31/50	Miles Driven 1950	Operating Cost 1950	Av. Miles Per Gal.	Av. Cost Per Mile
Mich.	Ford	1950	Sedan	5172	11,072	11,072	309.81	15.1	.028
	Ford	1949	Sedan	5248	30,900	14,443	368.28	16.9	.025
	Pontiac	1947	Sedan	5235	50,335	13,715	325.95	14.6	.024
Minn.	Plymouth	1947	Sedan	5168	43,507	12,062	471.68	16.8	.039
	Pontiac	1937	Sedan	5200	158,195	3,601	168.65	13.0	.047
	Pontiac	1947	Sedan	5223	35,606	12,916	399.08	14.5	.031
	Ford	1949	Sedan	5207	22,645	10,587	303.16	16.6	.028
	Ford	1949	Sedan	5227	16,477	9,281	183.47	17.9	.019
Wisc.	Pontiac	1947	Sedan	5236	58,213	17,453	362.07	16.5	.021
	Ford	1949	Sedan	5247	22,380	10,561	277.33	18.0	.026
	Ford	1949	Sedan	5249	18,900	9,305	190.61	18.3	.020
Milw.	Pontiac	1947	Sedan	5250	47,008	13,353	405.34	15.5	.030
Total 12 Automobiles on Hand 12/31/50					515,238	138,349	3,766.06	16.1	.027
Total 2 Automobiles Disposed of During 1950					177,753	461	6.60	20.0	.014
Total All Automobiles Operated During 1950					692,991	138,810	3,772.66	16.1	.027
Average for 12 Automobiles on Hand 12/31/50					42,936	11,529	313.83	16.1	.027
Average for 2 Automobiles Disposed of During 1950					88,876	230	3.30	20.0	.014
Average for 14 Automobiles Operated During 1950					49,499	9,915	269.48	16.1	.027

Trucks - Calendar Year 1950

State	Make	Year Model	Body Type	Tag #	Life	Miles	Operating		
					Mileage 12/31/50	Driven 1950	Cost 1950	Avg. Miles Per Cal.	Avg. Cost Per Mile
Ind.	Chev.	1947	Sed. Del.	5167	61,782	21,082	481.62	19.1	.023
	Chev.	1947	Sed. Del.	5170	28,607	14,113	249.72	18.0	.018
Iowa	Ford	1937	Pickup	5194	92,421	2,445	87.67	13.0	.036
	Chev.	1947	Sed. Del.	5195	35,336	16,660	372.36	21.1	.022
Mich.	Ply.	1939	Pickup	5183	63,895	-	-	-	-
	Chev.	1947	Sed. Del.	5228	25,577	7,070	190.97	14.8	.027
	Chev.	1947	Sed. Del.	5229	45,047	9,676	192.96	18.3	.020
	Chev.	1947	Sed. Del.	5237	22,310	2,227	69.74	13.4	.031
	Chev.	1947	Sed. Del.	5238	41,250	13,584	358.89	16.7	.026
	Chev.	1947	Sed. Del.	5239	51,008	21,720	439.56	16.9	.020
Minn.	Chev.	1947	Sed. Del.	5153	17,626	4,307	84.38	16.2	.017
	Chev.	1947	Sed. Del.	5156	8,642	1,628	37.64	18.1	.023
	Chev.	1947	Sed. Del.	5169	14,864	3,699	77.22	16.1	.021
	Chev.	1947	Sed. Del.	5175	29,509	12,400	277.33	15.7	.022
	Ford	1940	Panel	5209	53,510	3,480	94.14	17.1	.027
Ohio	Chev.	1947	Sed. Del.	5157	42,390	12,040	226.56	17.3	.019
Wisc.	Ply.	1939	Pickup	5166	56,719	5,741	173.95	11.8	.030
	Chev.	1947	Sed. Del.	5230	33,750	7,345	138.37	18.0	.019
	Chev.	1947	Sed. Del.	5231	49,100	16,065	361.41	19.3	.022
	Chev.	1947	Sed. Del.	5232	52,290	15,348	358.47	21.9	.023
	Chev.	1947	Sed. Del.	5233	49,736	15,936	410.15	16.3	.026
	Chev.	1947	Sed. Del.	5234	21,785	6,790	104.42	18.3	.015
Total 22 Trucks on Hand 12/31/50					897,154	213,356	4,787.53	17.5	.023
Total 14 Trucks Disposed of During 1950					653,038	7,729	138.91	11.6	.024
Total All Trucks Operated During 1950					1,550,192	221,085	4,974.24	17.2	.022
Average for 22 Trucks on Hand 12/31/50					40,780	9,698	217.61	17.5	.023
Average for 14 Trucks Disposed of During 1950					46,646	552	15.54	11.6	.024
Average for All Trucks Operated During 1950					43,061	6,141	138.17	17.2	.022
* To be Disposed of During 1951									
Total Travel All Vehicles During 1950						359,895	8,746.90	16.8	.024

Government Autos in Use, 1950, North Central Region

Make	Model	Year	On Hand Jan. 1, 1950	Re- ceived During 1950	Sold or Declared Surplus 1950	On Hand Jan. 1, 1951
<u>Passenger Cars</u>						
Ford	Sedan, 4-Door	1950	0	1	0	1
Ford	Sedan, 4-Door	1949	5	0	0	5
Chevrolet	Standard Coach	1940	1	0	1	0
Studebaker	Champion Coach	1941	1	0	1	0
Pontiac 6	Sedan, 4-Door	1937	1	0	0	1
Pontiac	Sedan, 4-Door	1947	4	0	0	4
Plymouth	Sedan, 4-Door	1947	1	0	0	1
Total Passenger Cars			13	1	2	12
<u>Trucks</u>						
Ford	Pick-up	1937	1	0	0	1
Ford	1-1/2 Ton Stake	1947	3	0	3	0
Ford	Sedan Delivery	1940	1	0	0	1
Chevrolet	Sedan Delivery	1947	18	0	0	18
Chevrolet	Sedan Delivery	1939	1	0	1	0
Chevrolet	Sedan Delivery	1940	1	0	1	0
Chevrolet	1-Ton Panel	1941	1	0	1	0
Plymouth	Pick-up	1939	10	0	8	2
Total Trucks			36	0	14	22
Total Motor Vehicles			49	1	16	34

Automobile Accidents

There was one automobile accident involving government-owned vehicles in 1950. This accident was of a minor nature, resulting in property damages only to the vehicles involved. No personal injuries sustained. Details of the one minor automobile accident follows:

1. Chevrolet Sedan Delivery, 1947 - License A-5167

Driver - Eugene P. Van Arsdal

Passengers - None

Place - Bloomington, Indiana

Date of Accident - May 31, 1950

Cause - Accident caused by attempting to park car at curb. Street was blocked by other vehicles. Private car parked illegally at curb allowed insufficient room for parking and caused damage to right rear fender of Government car.

Damage to Government Car - Right rear fender

Repairs - \$18.82 - at Government expense

Damage to other car - None

Injuries - None

Compensation Cases

No compensation cases reported during the Calendar Year 1950.

The number of compensation cases processed through the Milwaukee Office from 1936 through 1950 are shown in the following table by years and types of injury. These covered men employed on federal WPA programs, and on Bureau funds, both administrative and matching during the 15 years.

As would be expected in woods work, cuts, sprains and bruises, ivy poisoning, and eye injuries accounted for more than 84 percent of the 354 cases. Ivy poisoning cases varied considerably by years. For the period 1938 to 1941 these cases were most common in relation to other types. Several factors were responsible for this variation including geographical distribution of work, individual susceptibility of workers, weather conditions, use of Ivy-Tox, etc.

We have always stressed the importance of reporting even minor injuries. In the great majority of cases reported injuries were minor, and little, if any, lost time resulted. No fatal injuries occurred, and very few men had to be hospitalized.

As a preventive measure, all crews and automobiles are equipped with first aid kits, and most of the supervisors have been given training in first aid.

Compensation Cases Processed Through the Milwaukee Office, North Central Region, 1936 to 1950

Calendar Year	Heat and Frost In-jury	Dog Bites	Insect Caused In-jury	Eye In-jury	Ivy and Other Plant Poisoning	In-fectious	Cuts Sprains Fractures Bruises	Total	Number of Men Months	Cases per 1000 Man-Months
1936	3	-	4	22	16a	8	34	87	12,033	7.23
1937	-	-	-	5	2	2	4	13	4,583	2.84
1938	-	-	-	13	19	7	15	54	4,977	10.85
1939	1	3	3	8	26	1	7	49	4,458	10.75
1940	-	1	2	5	13	2	11	34	3,469	9.80
1941	-	1	1	7	12	3	8	32	3,516	9.10
1942	-	-	-	-	1	3	1	5	442	11.29
1943	-	-	-	1	2	-	1	4	440	9.09
1944	-	-	-	1	-	1	3	5	461	10.85
1945	-	-	-	3	2	3	13b	21b	764	27.49
1946	-	-	-	5	8	5	14	32	1,579	20.27
1947	-	-	-	2	2	1	6	11	883	12.46
1948	-	-	-	-	2	-	1	3	411	7.30
1949	-	-	-	2	-	-	2	4	359	11.14
1950	-	-	-	-	-	-	-	-	357	0.00
Total	4	5	10	74	105	36	120	354	38,732	9.17
Percent	1.1	1.4	2.8	20.9	29.7	10.2	33.9	100.0		

a - Includes 2 organic disease cases.

b - Eight of these due to one serious automobile accident in Minnesota.

Construction and Equipment

By transfer from surplus lists of other agencies we obtained, without cost, such items as an electric Ditto machine, posting tray, converter, brief cases, fire extinguishers, fluorescent lamps, transfer letter file sections, adding machine stand, calculator, house trailers, camera, drawing instruments, projector 2" x 2" slides SVE, screen, etc.

Authorization and Sources of Funds

As in the past several years, the work in 1950 was continued under Memoranda of Agreement drawn up between the responsible State Agencies and the Bureau of Entomology and Plant Quarantine. These, with the exception of the new agreement with Iowa, which is shown in the 1945 Regional Report, are shown in the 1936 Regional Annual Report, and are not repeated here.

During 1950, work was performed on funds furnished from the following sources:

1. State and Private

- a. Direct aid (Ribes eradication matched by W-e.14 Federal)
- b. Indirect aid (Other services)

2. Federal Blister Rust Appropriation

- a. W-a.14 Leadership, coordination, and technical direction
- b. W-e.14 Cooperative blister rust control on State and private lands. (Matched by State direct aid)
- c. 74 Blister rust control on National Forests in Michigan, Minnesota, and Wisconsin
- d. 77 Blister rust control on Indian Reservations in Minnesota and Wisconsin (Matched by Tribal funds on the Menominee Indian Reservation)

Spread of the Rust

Rust on ribes was not reported initially from any county in the region in 1950. Pine infection was found initially in 1950 in only one county, namely, Missaukee County, Michigan.

Climatic conditions were not favorable for the spread and intensification of blister rust in 1950. Spring was late in coming; summer was abnormally cool; and fall was cool and dry. Aecial production was lighter than usual and so was ribes infection, except in the northern part of the region where heavy ribes infection occurs every year.

Known spread of the rust on pines and ribes to the end of 1950 is shown in the following table and in Chart No. 3. Ribes infection has been found in all of the important pine producing counties, and pine infection in most of them.

Counties in Which White Pine or Ribes Infection Has Been
Found to December 31, 1950 - North Central Region

State	Total Number of Counties	Number of Counties with Infection				Percent Counties with Rust	
		Found		Cumulative		On Pines	On Ribes
		Initially 1950	to 12/31/50				
		on Pines	On Ribes	On Pines	On Ribes		
Illinois	102	0	0	7	24	7%	24%
Indiana	92	0	0	3	53	3	58
Iowa	99	0	0	9	56	9	56
Ohio	88	0	0	10	65	11	74
Michigan	83	1	0	53	83	64	100
Minnesota	87	0	0	38	38	44	44
Wisconsin	71	0	0	68	71	96	100
Region	622	1	0	188	390	30	63

White Pine

Values

The present stand of white pine listed as worth protection costs, 1,129,400 acres, is only a small fraction of the estimated 30,000,000 acres in the original virgin white pine stands in the three lake states. As would be expected existing stands are composed largely of trees in the sapling and reproduction classes, as shown in the following table:

Acres of White Pine in Control Problem,
Classified by States and Age Classes, All Ownerships
North Central Region, 1950

(Rounded to hundreds)

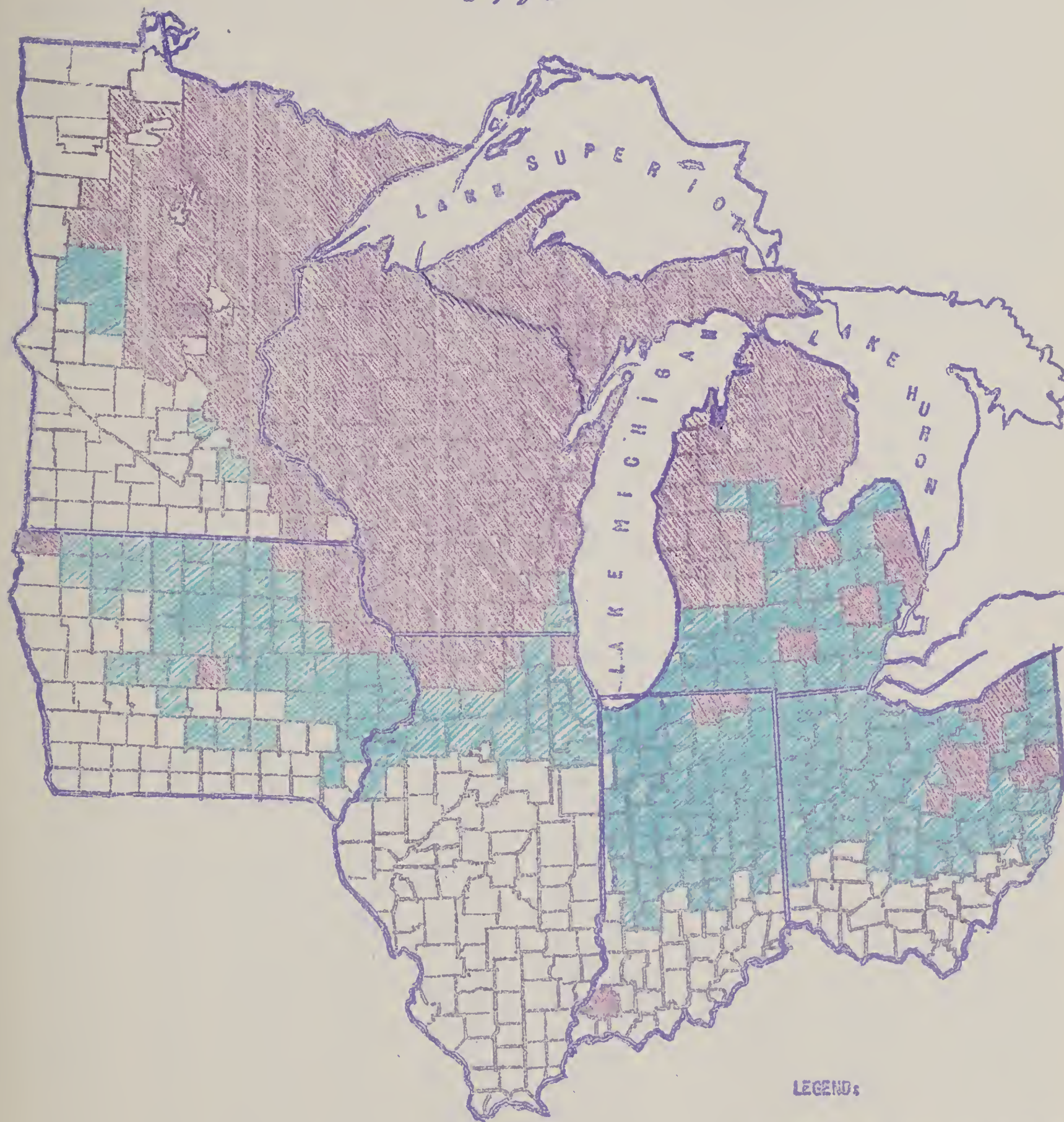
State	Mature (Acres)	Poles (Acres)	Saplings (Acres)	Reproduction (Acres)	Total (Acres)
Illinois	200	900	300	600	2,000
Indiana	500	100	5,700	3,900	10,200
Iowa	2,500	1,500	1,100	800	5,900
Ohio	100	2,000	7,000	12,000	21,100
Michigan	87,600	72,500	74,400	161,500	396,000
Minnesota	27,000	80,400	71,000	60,200	238,600
Wisconsin	20,100	56,800	80,700	298,000	455,600
Region	138,000	214,200	240,200	537,000	1,129,400
Percent of Total	12%	19%	21%	48%	100%

CHART 3

STATUS OF BLISTER RUST INFECTION

NORTH CENTRAL REGION

1950



LEGEND:



PINK INFECTION WITH OR
WITHOUT ROSETTE INFECTION
REPORTED



GREEN INFECTION ONLY

On the basis of expected yields per acre at maturity of 35 M board feet in Indiana, Illinois and Ohio; 20 M board feet in Iowa; and 12 M board feet in Michigan, Minnesota and Wisconsin, (arrived at after consultations with numerous foresters in the region) the present and future stumpage values of this acreage of white pine within the control area is calculated to be nearly 17,000,000 M board feet. At an average stumpage of \$25 per M board feet, this amounts to about \$425,000,000. In addition white pines have high but intangible, aesthetic and protection values.

Surveys

Table 1 indicates the large amount of survey work done in 1950. A total of 82,030 acres of pine and 195,445 acres of control area was mapped. The application of these survey and post check figures to the total control problem as it existed in 1949, resulted in a net decrease of about 2,800 acres of white pine and 337,900 acres of control area. The major decrease in white pine acreage was on the Superior National Forest, Minnesota, where about 10,400 acres of white pine were taken out of the control problem in 1950 because of rust, cost of working, etc. To offset this loss increases in white pine were found in Wisconsin chiefly.

The large loss of 337,900 acres in control area took place in Ohio and Indiana. Those unworked areas in these two states each containing less than 5 acres of white pine or 2,500 trees, were deleted. This reduced the control areas by 97,800 acres in Indiana, and by 242,600 acres in Ohio. Strangely enough there was an actual increase of 800 acres of white pine in Indiana and a gain of 90 acres in Ohio due to the active planting program in these two states.

Acres of White Pine in Control Problem at End of Year as Shown
North Central Region

Year	Ill.	Ind.	Iowa	Ohio	Mich.	Minn.	Wisc.	Region
1932	1,600	1,700	2,400	54,900	1,027,446	1,043,730	756,315	2,888,091
1933	1,600	1,700	2,400	54,900	1,027,446	1,043,730	756,315	2,888,091
1934	1,200	630	4,000	3,151	575,832	356,436	585,960	1,527,209
1935	1,200	1,000	5,000	12,300	545,218	362,616	327,060	1,254,394
1936	1,185	2,682	5,000	7,045	545,218	362,616	327,060	1,250,806
1937	2,068	4,287	5,100	8,490	560,520	232,122	349,227	1,161,814
1938	2,968	3,998	5,600	11,503	586,691	247,587	361,406	1,219,753
1939	3,004	4,750	5,600	14,010	586,691	280,910	363,963	1,258,928
1940	3,289	6,056	3,934	15,358	459,106	264,397	363,963	1,116,103
1941	3,455	6,351	3,955	17,038	443,187	261,562	387,000	1,122,548
1942	3,524	7,249	5,000	33,771	446,454	285,680	390,649	1,172,327
1943	3,508	7,911	5,000	35,713	441,914	282,808	376,560	1,153,414
1944	2,219	6,656	5,300	18,362	444,019	278,193	362,478	1,137,227
1945	2,155	6,948	5,656	19,006	441,743	279,727	392,117	1,147,352
1946	2,103	8,820	5,792	20,169	417,193	276,868	417,397	1,148,342
1947	1,923	8,567	5,845	20,230	402,760	266,553	429,815	1,135,693
1948	1,943	8,809	5,852	20,420	395,238	259,316	439,909	1,131,487
1949	1,946	9,424	5,859	21,053	397,897	250,000	446,021	1,132,200
1950	1,986	10,245	5,935	21,141	395,967	238,572	455,552	1,129,398

Acreages shown in 1932 and 1933 were largely estimates, and were much too high. By 1934 some survey work had been done and additional observations resulted in throwing out over 1,300,000 acres, or nearly half of the acreage shown in 1933. Survey work done each year further reduced the white pine acreage. Since 1940 the total acreage has been roughly constant. Acreages by 1934 to 1949, are shown graphically in Chart 3A, reproduced here from 1949 Report.

Since 1939 there has been a steady increase in acreage listed in Wisconsin and in the Southern Area. In Michigan a large acreage, consisting of planting sites and poorly stocked white pine, was thrown out in 1939. Since then, both in Michigan and Minnesota, there has been a gradual reduction in listed acreage.

Changes in 1950 resulted in a net loss of 2,800 acres. The largest single loss was in Minnesota, 11,400 acres, due primarily to taking out of the control problem on the Superior National Forest several thousand acres of white pine which were already too much damaged by blister rust, too costly to protect, or which had insufficient white pine values to justify control work. Losses in Minnesota and Michigan were nearly offset by a gain of 9,500 acres in Wisconsin, due to natural reproduction.

While there was a slight gain of 800 acres in Indiana, and 100 acres in Ohio, these gains were significant. In these two states the permanent records were analyzed and all areas of less than 2,500 white pines or 5,000 acres not yet worked were taken out of the control problem. The changes are best seen as follows:

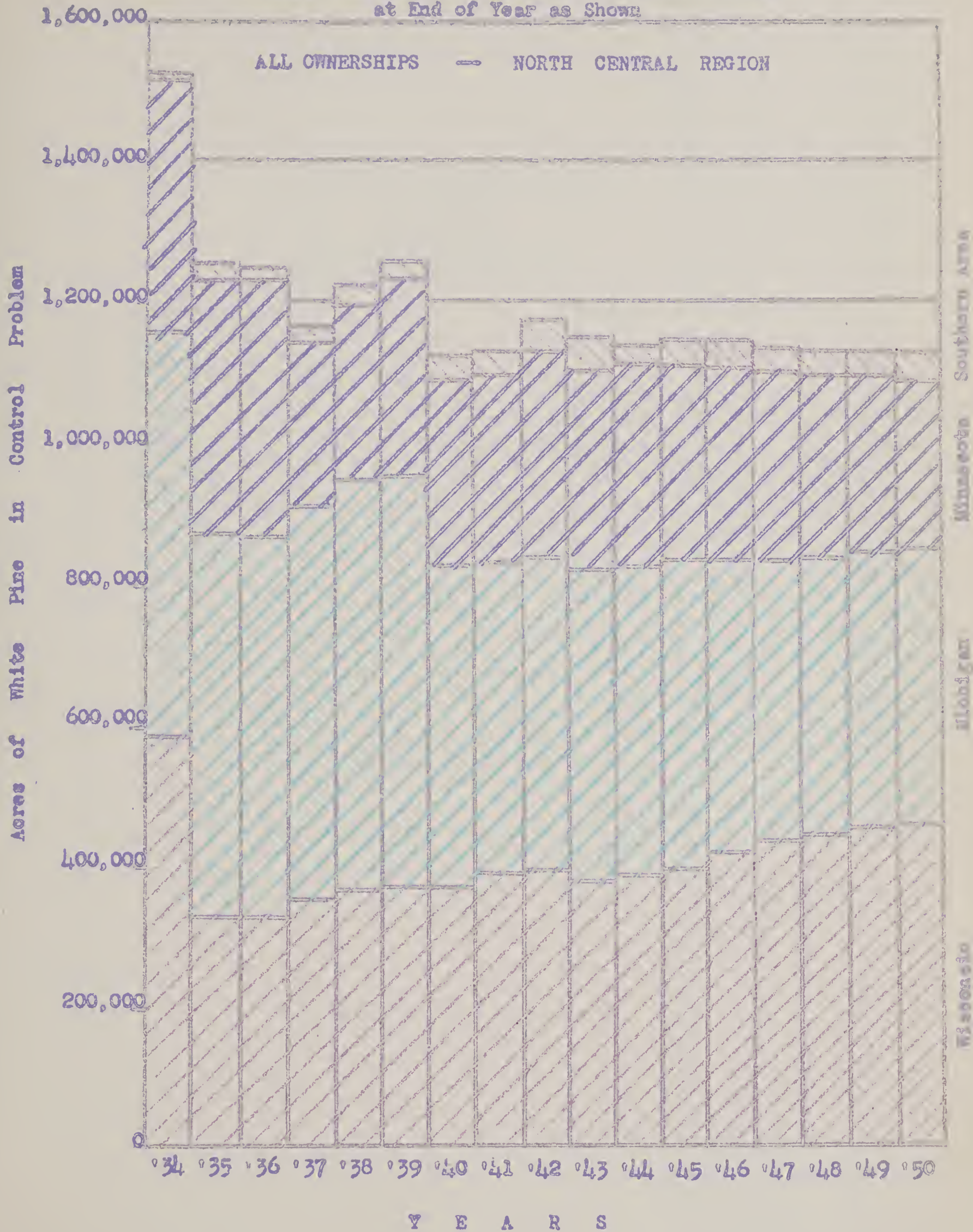
State	Control Problem	No. of Areas	Acres of W.P.	Acres of Control Area
Indiana	At end of 1949	2,455	9,424	189,710
	At end of 1950	702	10,245	91,889
	Net Change	-1,753	+ 821	-97,821
Ohio	At end of 1949	5,691	21,053	456,005
	At end of 1950	1,727	21,141	213,374
	Net Change	-3,964	+ 88	-242,631

Acreages shown in the table are net figures. They are the results of applying additions and subtractions of acreages found on current surveys to the status of control table of the previous year. The character of losses and gains are not shown. Since 1940 the total acreage of white pine has remained fairly constant, but the character and quality of the white pine has changed greatly.

To find out these changes an analysis of survey records by jobs was started in the Region in late fall of 1949. Tabulations were made of acreages lost or gained for the following reasons:

CHART 3A

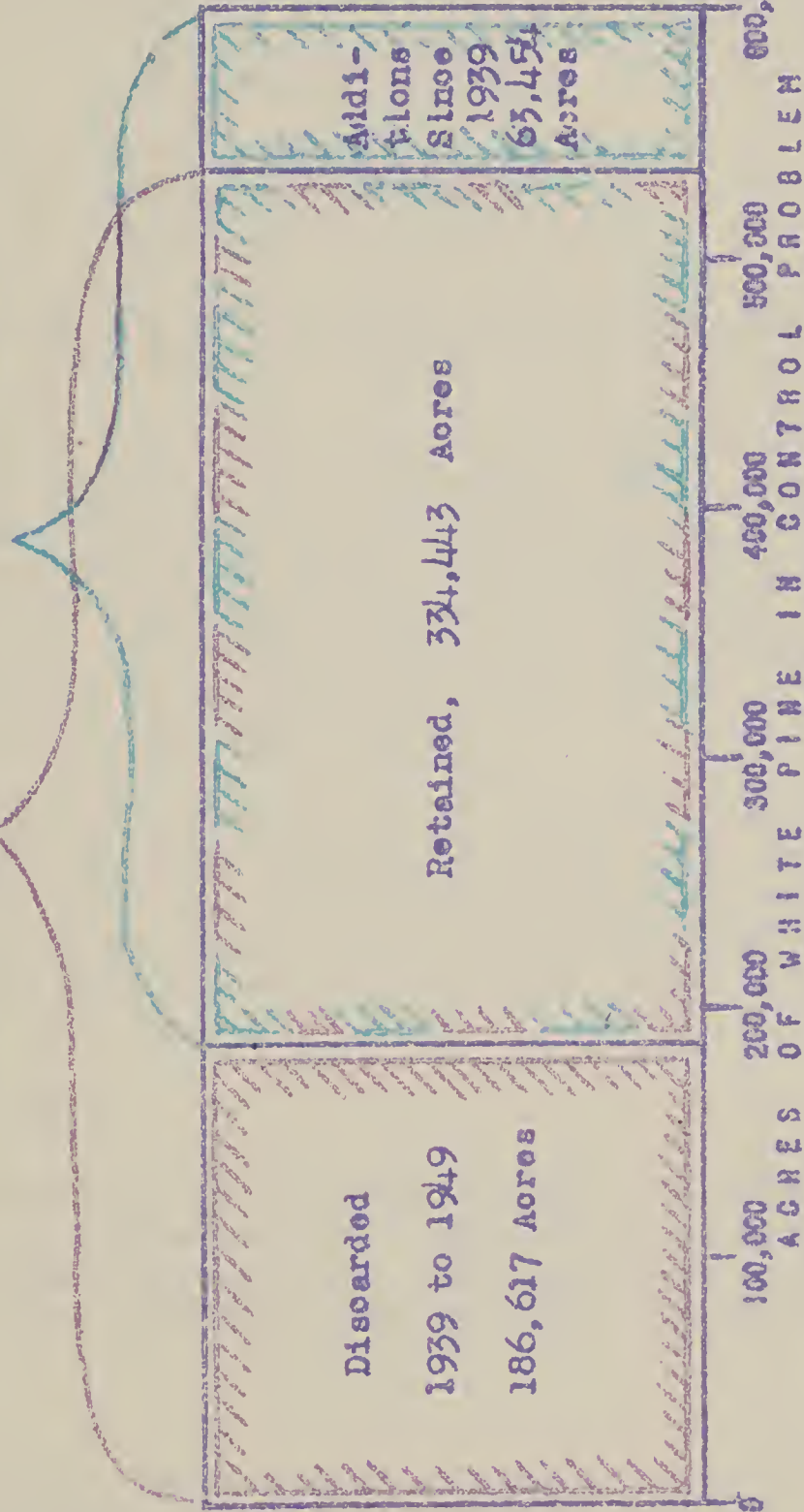
Acres of White Pine Listed in Control Problem
at End of Year as Shown



C H A R T 3B

Changes in White Pine Acreage in Control Problem, MICHIGAN, 1939 to 1949

White Pine in 1939 521,060 Acres
White Pine in 1949 397,897 Acres



Acres Discarded by 1949	
Insufficient Original Values	100,588 Acres
Cutting and Logging	39,348 "
Plantation Failures	16,800 "
Planting Sites Not Planted	12,056 "
Too Costly to Work	9,153 "
Damage by Blister Rust	3,956 "
Fires	3,838 "
Browse Damage	878 "
Total Discarded	186,617 Acres

Acres Retained 1949	
No Change	99,092 Acres
Better Stocking	169,329 "
Orig. Plant. Est.	66,022 "
Total Retained	334,443 Acres

Acres Added Since 1939	
New Natural Reproduction	44,594 Acres
New Plantations	11,837 "
Better Survey Methods	7,023 "
Total Added	63,454 Acres

Thus, by 1949, of the 521,060 Acres listed in 1939, 19 percent remained unchanged; 45 percent was in better condition due principally to new natural reproduction; and 36 percent had been discarded. The 397,897 Acres listed in 1949 is made up of 25 percent mapped before 1939 and unchanged; 59 percent retained and improved; and 16 percent, largely new reproduction, added since 1939.

Decreases in Acreage

1. Poor pine values originally
2. Logging
3. Fire
4. Planting site not planted
5. Plantation failure
6. Blister rust damage
7. Too costly to work
8. Browse damage
9. Area too small

Increases in Acreage

1. New plantings
2. Natural reproduction
3. Inaccurate original survey

The data for Michigan as shown in the 1949 Annual Report is repeated here because it is significant of changes in the problem in the three lake states.

Chart 3-B is intended to show the changes in white pine acreage in Michigan in the last decade and the reasons for such changes. Between 1939 and 1949 there is a net reduction of about 123,000 acres, made up by discarding 186,000 acres and adding 63,000 acres. The 100,000 acres discarded because of insufficient original values should never have been included in the problem. Omitting these acres from consideration, it follows that during the 10-year period we lost 86,000 acres of white pine for reasons shown, and gained 63,000 acres largely of new natural reproduction.

The figures emphasize the large increase of natural white pine reproduction during the period. On 214,000 acres, or 54 percent, natural white pine reproduction 1 to 10 years of age has either increased in stocking older stands, or has made up new areas. It thus appears that while the acreage of white pine listed in 1949 is less than in 1939, there are many more white pine trees now than ten years ago.

Ownership of White Pine

The ownership status of white pine did not materially change in 1950 from previous years. Approximately 52 percent was in private ownership; 26 percent owned by states, counties and municipalities; 15 percent by U. S. Forest Service; and 7 percent administered by the U. S. Indian Service.

Checking

This activity, while a type of survey, is treated separately. Checking is the systematic evaluation of ribes eradication the same year the work is done to determine if acceptable ribes eradication work has been performed, or if the whole or certain portions of a given area need rework. If the check reveals portions of an area with ribes feet of live stem averaging substantially more than 25 feet of live stem per acre, those portions should be reworked.

The results of checking of ribes eradication work in 1950 are shown by states and ownership classes in Table 4. It will be noted that of the 111,501 acres worked and checked 99.8 percent showed less than 25 F.L.S. per acre after eradication. The average for all checking was 1.3 bushes and 2.6 F.L.S. per acre. This represents excellent and thorough work. It was based on 2,339.02 acres of strip, or slightly more than 2 percent of the area worked and checked.

Local Control Accomplishment

A more detailed discussion of local control accomplishments is given in the sections devoted to the separate ownership classes, state and private lands, work Project BLR-3; National Forests, Project BLR-4; and Indian Reservations, Project BLR-7. The discussions following will pertain to the work as a whole.

Local Control in 1950

In Table 2, 2A, and 3, local control work performed in 1950 is shown classified by states and work agencies. For details of work done the reader is referred to these tables. Approximately 44 percent of the total 131,925 acres covered was initial; 39 percent was second working, and 17 percent was third and other workings.

More acreage was worked in 1950 than in 1949, by about 6,600 acres. In particular, about 24,400 more acres were worked on the Bureau-State program in 1950 than in 1949, with less work done in 1950 by both the Forest Service and Indian Service.

Work on Indian Service, Forest Service, and state lands is fairly on schedule, except on the Superior National Forest and certain other public lands in northeastern Minnesota, where rust is very active, ribes are abundant, and control costs are high. Work on private lands has fallen behind schedule, and thousands of acres of good white pine are being lost because of lack of funds to work such areas on time.

Status of Control

The present status of control by States and ownership classes is given in Tables 6 and 7 and graphically in Charts 1 and 2. As of December 31, 1950, the status of control by States including all ownerships is shown in the following table:

State	Acres of Control Area	Percent Control Area	
		Initially Worked	On Maintenance
Illinois	13,429	83.5	14.3
Indiana	91,889	85.7	66.9
Iowa	50,501	68.4	37.3
Ohio	213,374	83.7	41.2
Michigan	1,184,887	90.7	41.1
Minnesota	541,130	67.8	21.3
Wisconsin	1,477,354	84.1	41.7
Region Total	3,572,564	83.6	38.9

There was an increase of 6.3 percent or about 322,000 acres in the acreage placed on maintenance in 1950 over that at the end of 1949.

Status of Control by Ownership Classes

North Central Region on December 31, 1950

Ownership Class	Acres of Control Area	Percent Control Area	
		Initially Worked	On Maintenance
Forest Service	354,713	79.8	51.9
Indian Service	131,235	95.6	65.7
National Park Service	1,530	7.8	0.0
Non-Fed. Public	786,069	91.2	48.3
Private	2,299,017	81.0	32.2
Region Total	3,572,564	83.6	38.9

It is apparent from the table above that excluding Isle Royale with acreage too small to be significant, best progress towards the goal of accomplishing control has been made on Indian Service lands, with 95.6 percent initially worked and 65.7 percent on maintenance. In fact quite satisfactory progress has been made to date in protecting publicly owned white pine. Our big problem remains of protecting privately owned white pine. Of this privately-owned white pine 19 percent has not been initially worked and 68 percent needs further work before it can be placed on maintenance.

The protection of young white pine regardless of ownership against blister rust is a public responsibility. The private owner of such white pine will usually not live long enough to reap the benefits in mature timber of young stands he has protected against the rust. Furthermore he is usually unable to stand such costs. Young timber is a future national resource regardless of ownership. A public agency has to take the responsibility of preserving such potential national resources. We cannot expect private agencies or individuals to take this responsibility. Until this principle is recognized and acted upon we will continue to lose privately owned young white pine stands to the rust.

As blister rust control workers we must look further than saving existing white pine crops. The presence of ribes on good white pine sites destroys not only the existing stands but prevents indefinitely the growing of future white pine forests.

Value of Blister Rust Control

The problem of expressing the values saved by blister rust control is made difficult by the many intangibles to be considered. Since the rust primarily damages young stands, future yields and stumpage values must be estimated. The rotation and rate of growth are important. Abundance of ribes, weather conditions and prevalence and rate of spread of the rust in different parts of the region must be considered. There is danger that in trying to evaluate all of these factors the process may become too complicated to be useful. Since estimates have to be used any way, the simplest approach may be best.

Values should be expressed in terms of the white pine crop, in stumpage, rather than in acres. For purposes of estimates certain basic assumptions have to be made. After consulting with foresters and others we have used a rotation of 60 years in Illinois, Indiana, and Ohio; 80 years in Iowa; and 120 years in Michigan, Wisconsin and Minnesota. We have used a stumpage yield per acre at maturity of 35 M board feet in Illinois, Indiana and Ohio; 20 M in Iowa; and 12 M in Michigan, Wisconsin and Minnesota. Higher yields were used in the Southern Area because white pine there is mostly in plantations and thus fully stocked. Expected yields in these states of 50 M and 60 M board feet per acre are not uncommon. Average yields in the three Lake States are lower because of the many acres of natural white pine not fully stocked. We are using a stumpage of \$25 per M board feet throughout the region. This is lower than the present average, and there is no reason to believe future stumpage will materially decrease. Foresters have criticized all of these average assumed values as being too conservative.

In our 1949 Report we attempted to show white pine timber values in relation to blister rust. These figures, taken from the 1949 Report, are summarized as follows:

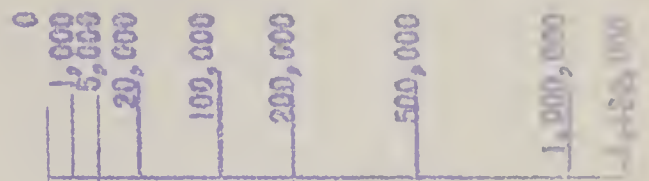
If blister rust had remained unchecked we would lose 8,227,000 M board feet valued at \$205,680,000 at maturity. Control work to date (1949) has saved of these expectation values, 6,143,000 M board feet of future stumpage valued at \$153,565,000 at maturity. There still remains to be saved by future control work expectation values of 2,084,000 M board feet of future stumpage with a mature value of \$52,115,000.

While it is not possible to express accurately future white pine values saved by present control work, it may be advantageous to indicate possible savings. One way is to assume that initial working saves 70 percent; second working 30 percent; and third working 20 percent; of the expectation value at maturity. This is not very satisfactory since many stands require only one, and some two workings before they are placed on maintenance. On this basis, however, the savings can be calculated as shown in the following table:

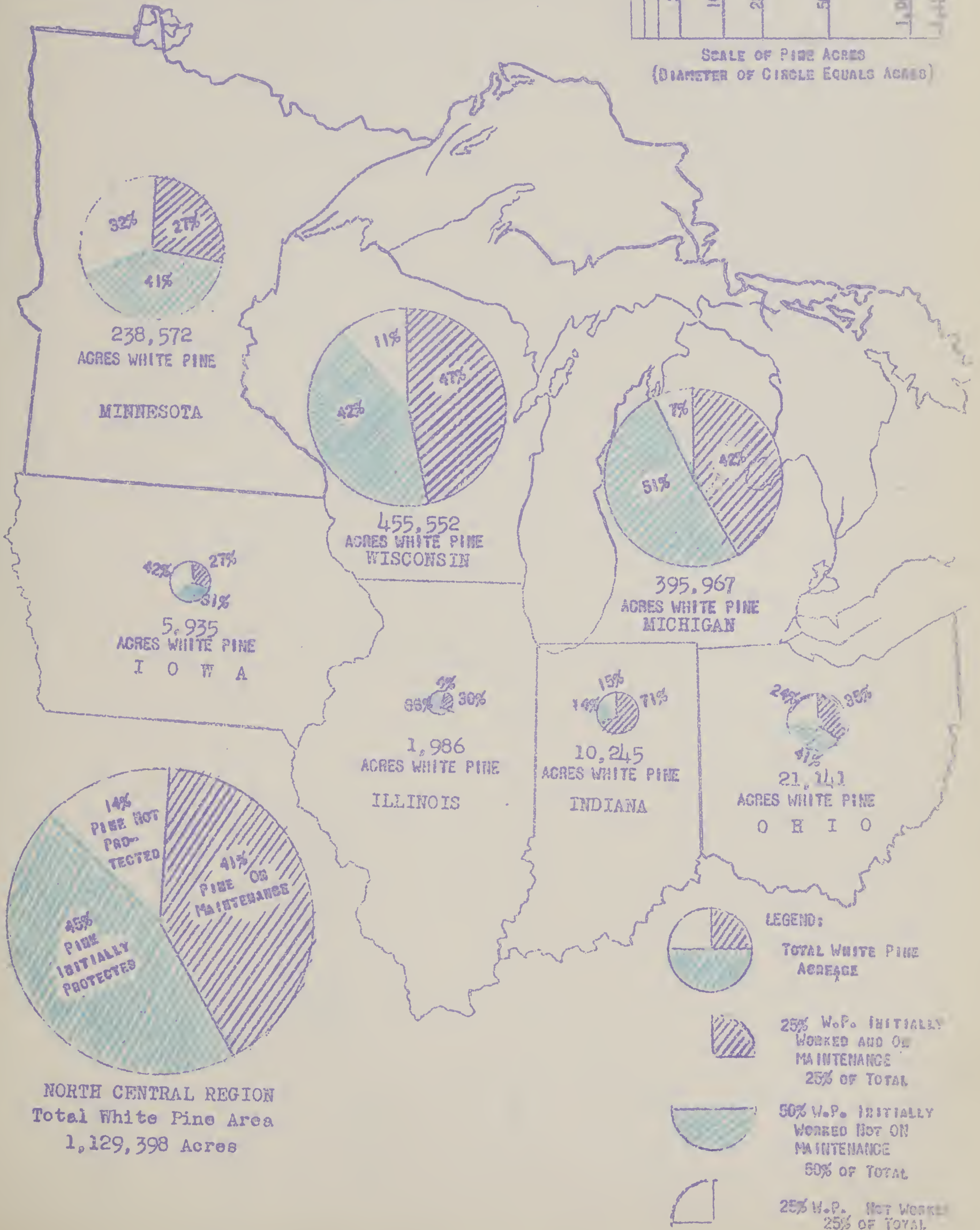
Status of Blister Rust Control Work, ALL OWNERSHIPS,

In NORTH CENTRAL REGION - 1950 - Acres of White Pine

(Based on Tables 6 and 7)



SCALE OF PINE ACRES
(DIAMETER OF CIRCLE EQUALS ACRES)



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1881

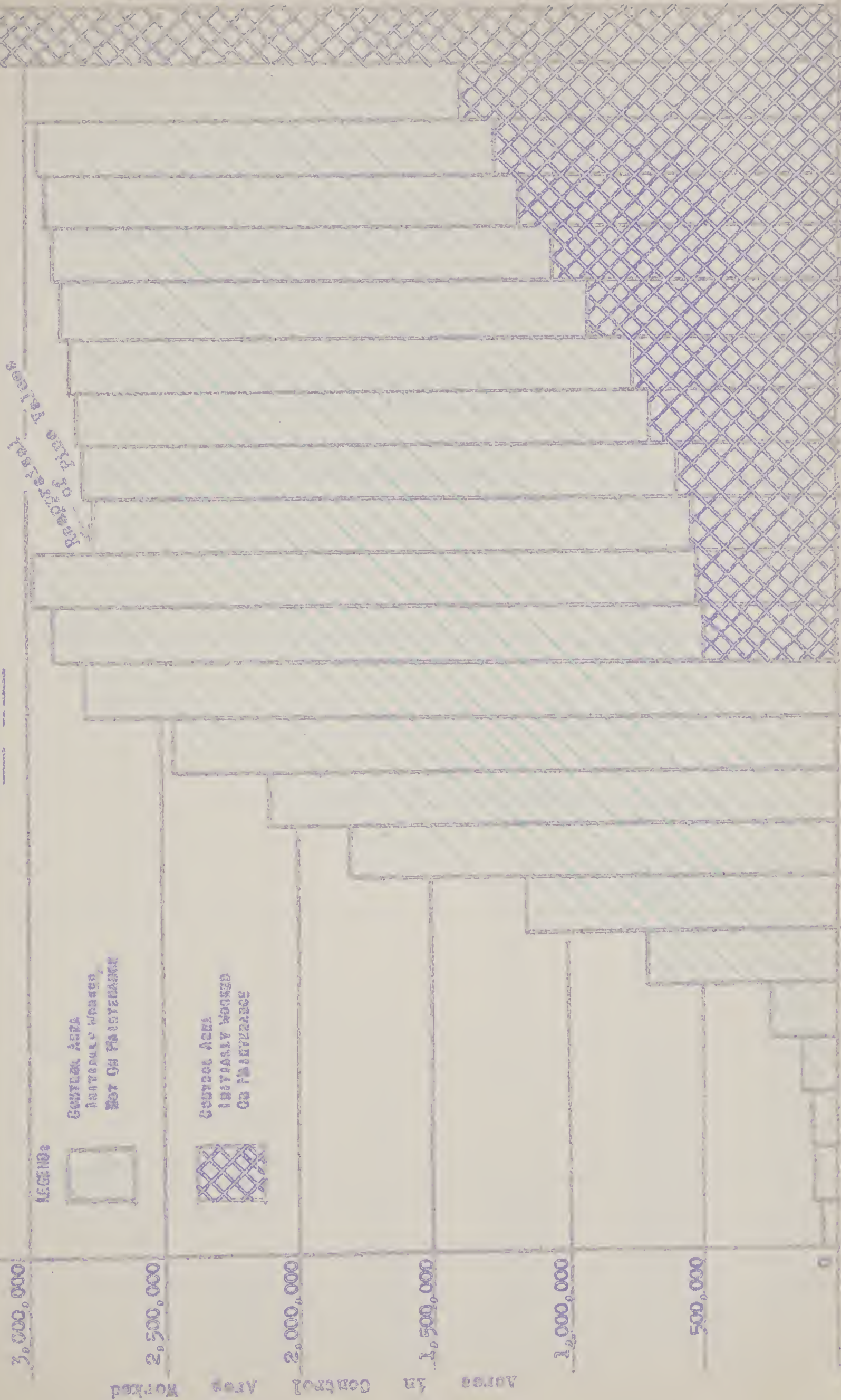
...



Status of Control at End of Each Year as Shown, All Ownerships

NORTH CENTRAL REGION

Net Acres



Headwaters



CHART A

Status of Control by Ownership Classes

ALL STATES — NORTH CENTRAL REGION

Inception to December 31, 1950

(Based on Table 7)

Legend:



Acres Unworked

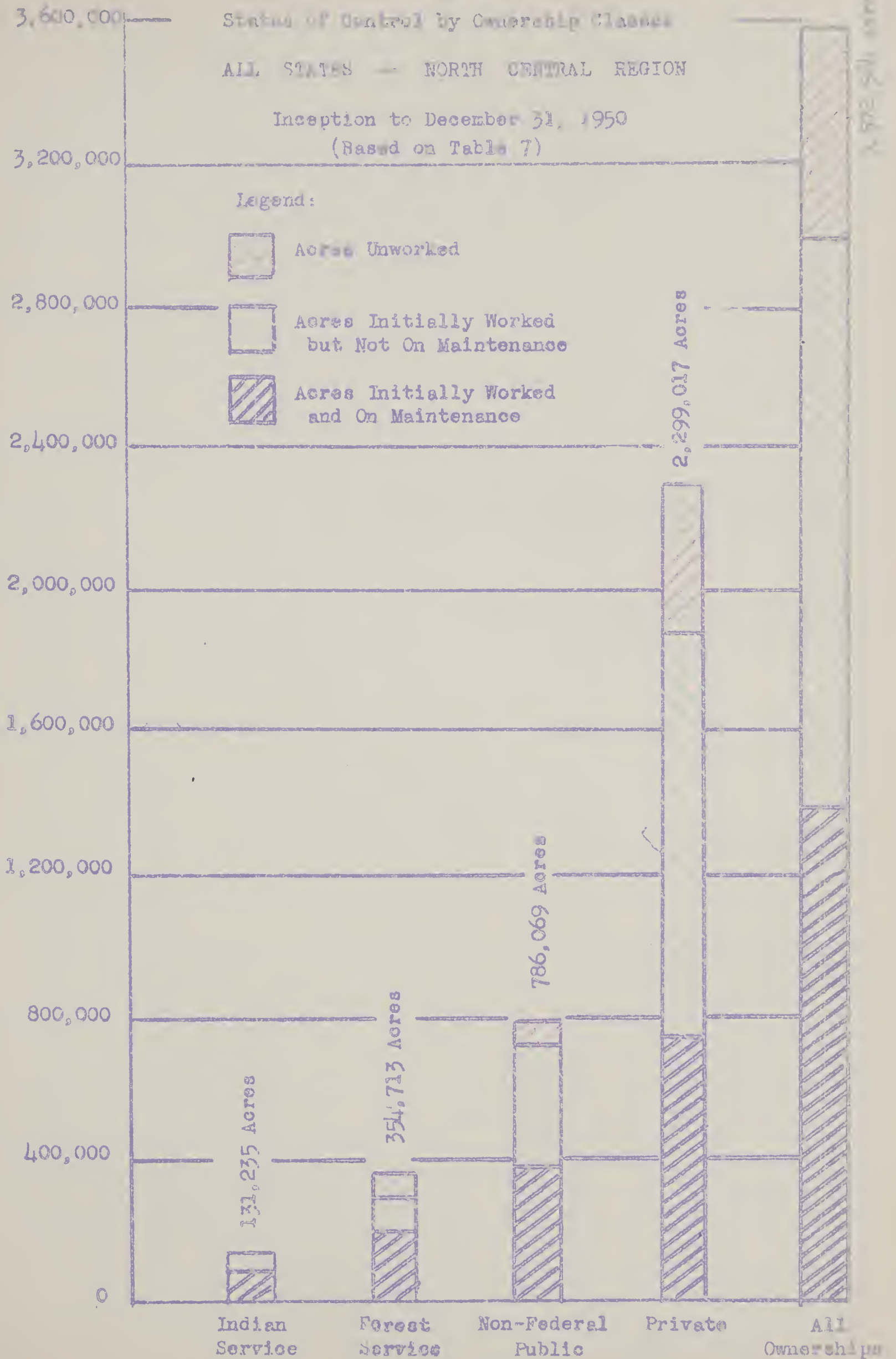


Acres Initially Worked
but Not On Maintenance



Acres Initially Worked
and On Maintenance

ACRES IN CONTROL AREA



C H A R T 7

Ribes Destroyed per Acre by States and Ownership Classes, All Workings, Inception to December 31, 1950

NORTH CENTRAL REGION (Based on Table 8)

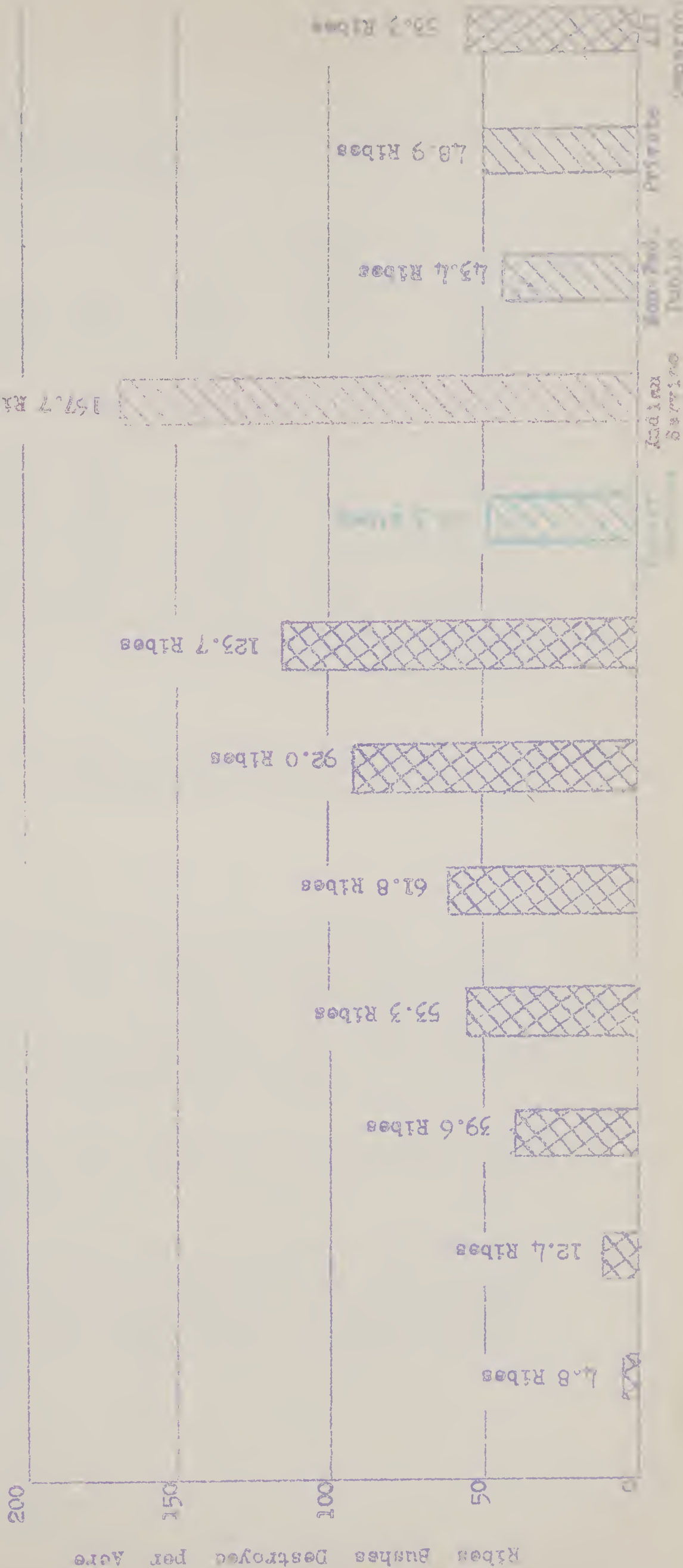
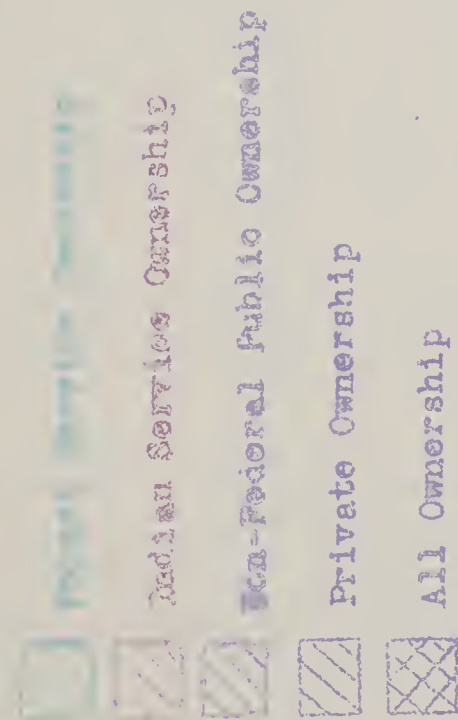




Table Showing Possible Savings in White Pine Timber Values at Maturity
Accomplished by Blister Rust Control in 1950
North Central Region

State	Acres of White Pine Worked, 1950				Equiv- alent Acres (100% Saved)	Expec- tation Value of Timber at Maturity Per Acre	Total Expec- tation Value Saved
	Initial (70% Saved)	Second (30% Saved)	Third (20% Saved)	Total			
Ill.	20	3	74	97	30	\$875	\$ 26,250
Ind.	646	426	373	1,445	655	875	573,125
Iowa	45	35	65	145	55	500	27,500
Ohio	432	432	400	1,264	512	875	448,000
Mich.	3,332	8,865	4,669	16,866	5,926	300	1,777,800
Minn.	472	1,467	1,506	3,445	1,072	300	321,600
Wisc.	13,848	10,330	4,369	28,547	13,666	300	4,099,800
Total	18,795	21,558	11,456	51,809	21,916		\$7,274,075

On the basis of the above table we saved over 7 million dollars of future mature white pine timber, excluding protection and aesthetic values. The cost of this protection work represents about 3 percent of the maturity value protected.

Cumulative Local Control

In Table 8, total eradication work by workings, States, and ownership classes are shown from the time work started to and including 1950. Acreages for initial working in Table 8 are gross and will differ from net initially worked acreages in Tables 6 and 7. In the latter tables, if an area after initial working was burned over and pine values destroyed, acres initially worked were removed from the status table. Such acres are retained, however, in Table 8, because it is a statement of work done.

It may be noted in Table 8 that 3,502,935 acres have been worked initially; 1,101,481 acres, or 31 percent worked twice; and 248,162 acres, or 7 percent worked more than twice.

In Table 8, ribes destroyed per acre are shown. Since this is a cumulative table with large acreage and ribes figures, the per acre figure should be fairly representative of ribes abundance in the State or ownership class concerned. In Chart 3, the average number of ribes destroyed per acre in "All Workings" is used, in order to obtain as large a base as possible.

In order of increasing abundance of ribes, starting with the smallest number per acre, the States line up as: Indiana, Ohio, Michigan, Wisconsin, Illinois, Iowa, Minnesota. Iowa is second high primarily because much of the acreage in control zones around shelterbelts consisting only of cultivated fields, was not counted. This reduced the number of acres to apply against the number of ribes pulled. The average number of ribes per acre in Minnesota, 123.7 is one third again larger than its nearest competitor, Iowa, with 92.0 ribes per acre.

On the basis of ownership classes, ribes destroyed per acre were much more abundant on Indian Reservations, 167.7 per acre, than on National Forests, 48.3 per acre, or on private lands, 48.9 per acre, or on non-federal public lands, 43.4 per acre.

In Table 8A a summary of ribes eradication, all workings, from inception through 1950 is given by States, ownership classes, and operating agencies. The chief value of Table 8A is to show the operating agencies which have performed ribes eradication on lands under varying ownerships. Thus, on lands under Forest Service ownership, Bureau funds have been used to eradicate ribes from 132,523 of the total 524,310 acres worked. On the other hand Forest Service funds have been used to work 845 acres out of 2,836,876 acres of private lands worked. It is economically sound for land of all ownerships to be covered for ribes within the working radius of a crew of trained men. The working of Forest Service pine by Bureau crews, and of State and private white pine by Forest Service crews can thus be balanced off, one against the other.

Nursery Sanitation

Work Done 1950

There were seven nurseries given sanitation workings during 1950. Six were state, and one was privately owned. There were 24,927 ribes removed from 2,441 acres of control area at a cost of 239 man-days. This work provided protection for approximately 8,800,000 white pine trees. In protecting nurseries against blister rust, the full 1500-foot protection zone for all ribes and one-mile wide zone for cultivated black currants are maintained. The reason for this additional protection width is because nursery stock is often grown under overhead watering systems which create more or less optimum infection conditions. In order to maintain ribes-free conditions and to insure so far as possible the production of rust-free white pine planting stock, periodic workings of white pine growing nurseries are performed at least every two years. At the present time, practically all of our white pine producing nurseries, except a few private nurseries, have been protected, and the problem involves chiefly the maintenance of this protection work. Nursery sanitation performed in 1950 is shown in Table 9.

Of particular interest was the nursery sanitation work done at the Nepco 5-Mile Nursery on funds furnished by the Nekeosa-Edwards Paper Company. There were large masses of Ribes americanum bushes sprayed with 2-4D. These areas will again be covered in the spring of 1951 to kill seedlings and sprouts.

The following table, taken from Omnibus Table B, shows the present status and cumulative work done, 1918 to 1950 in nursery sanitation in this Region:

State	Number Nurseries Worked			Total Acres Worked	Total Ribes Destroyed	Total Man-days Used
	Protective Zones		Total			
	Retained	Dropped				
Illinois	4	4	8	2,520	50,401	380
Indiana	2	4	6	3,750	11,351	61
Iowa	7	2	9	3,436	67,735	833
Ohio	7	9	16	7,021	60,645	1,912
Michigan	8	6	14	5,006	1,123,650	16,377
Minnesota	6	11	17	6,308	1,335,438	5,091
Wisconsin	10	8	18	5,267	911,749	8,711
Region Total	44	44	88	33,308	3,560,969	33,365

The usual reasons for not maintaining nursery sanitation zones around white pine producing nurseries are that such nurseries discontinued the growing of white pine, or the prevalence of ribes made the sanitation work too costly to maintain.

Control Area Permits

As defined in Federal Quarantine 63, the States of Michigan, Minnesota, Ohio and Wisconsin are White Pine Control Area States. The interstate movement of ribes into designated control areas within these States can only be done if each ribes shipment carries a control area permit issued by the proper State Plant Quarantine Officer. The issuing of control area permits is a function of the State which has been carried on for several years. Previous to 1943, however, no record on this activity has been made in our Annual Reports. A description of the procedure in issuing control area permits is given in the 1943 Annual Report, and will not be repeated here.

As noted in Table 5, during 1950, out of 448 applications for ribes shipping permits, 86.8 percent were approved. The large majority of the shipments were made in the spring. Of the 59 applications not granted, 28 were rejected by State authority because of danger to white pines, and 28 applications were voluntarily cancelled by applicant.

Violations of Federal Quarantine 63

As reported by the Division of Domestic Plant Quarantine, during the Fiscal Year 1950, there were 12 violations of Federal Quarantine 63, all intercepted at Chicago, as ribes shipped without permits, one shipment to Colorado, seven to Michigan, one each to Ohio and Virginia, and two to Wisconsin. By comparison there were five violations reported going to the states of this region in 1949. For the whole United States, there were 17 violations of Federal Quarantine 63 in Fiscal Year 1950, compared with 14 in Fiscal Year 1949, and 9 in Fiscal Year 1948.

Cultivated Black Currant Elimination

No work under this heading was done in 1950. To the end of 1950 in the Region, 288,758 cultivated black currant bushes in 34,797 plantings had been destroyed. There remain 982 known plantings with 6,607 cultivated black currant bushes not yet destroyed. Thus, 97.8 percent of all known bushes have been eliminated.

Canker Pruning

A considerable amount of canker pruning in protected areas was performed in four states, as noted in Table 14. In 1950, there were 34,001 cankers removed from 25,453 infected trees and 8,059 infected trees removed. To date, 210,603 cankers have been removed from 108,083 trees, and 11,689 infected trees have been cut down, chiefly in Minnesota, Michigan and Iowa. It is believed that when adequate labor is again available, canker pruning on selected crop trees in a protected stand can be economically justified, as a control measure.

In 1950 a considerable amount of canker pruning was done on protected areas in Minnesota by the Indian Service, in Wisconsin by both the Indian Service and Forest Service, and in Iowa a small amount of canker pruning was done on Bureau-State funds. In all 34,001 cankers were destroyed to save 25,453 trees, and 8,059 infected trees were cut down. Total work done in 1950, and to date, is shown in Table 14.

Informational Activities

Information about blister rust and its control was carried to the cooperating agencies and to the general public through the media of Fair Exhibits, displays, a few radio talks, newspaper articles, addresses at meetings, correspondence, bulletins, reports, and by direct personal contact. As an increasing amount of effort is being directed toward the securing of private cooperation, more direct contacts by the Leaders and Field Supervisors with private pine owners are being made with good results.

The two new blister rust films, made available in 1948, "Blister Rust - Enemy of White Pines" and "Paul Bunyan Had a Son", were used extensively in 1950. The picture, "Paul Bunyan Had a Son" was filmed in the North Central Region and is particularly in demand in this Region because of its local color. During 1950 "Paul Bunyan Had a Son" was shown 330 times to 26,600 people and "Blister Rust - Enemy of White Pines" 164 times to 14,000 people. About 60 percent of the audiences were students and 40 percent the general public. Details of these showings are given in the Table.

Showing of Two Blister Rust Control Films - North Central Region
Calendar Year 1950.

State	"Paul Bunyon Had a Son"				"Blister Rust, Enemy of White Pines"				Both Films		
	People in Audience				People in Audience				Times Shown	Number of Meetings	Total People Seeing
	Times Shown	General Public	Students	Total	Times Shown	General Public	Students	Total			
Illinois	15	429	779	1,208	1	35	-	35	16	16	1,243
Indiana	1	107	-	107	1	-	50	50	2	2	157
Iowa	7	110	615	725	4	110	155	265	11	7	990
Michigan	45	392	3,504	3,896	13	-	1,407	1,407	58	58	5,302
Minnesota	134	1,972	7,391	9,363	119	1,739	5,712	7,451	253	191	16,814
Wisconsin	50	1,400	1,133	2,533	-	-	-	-	50	50	2,533
Region	292	4,410	13,422	17,832	138	1,884	7,324	9,208	390	394	27,040
Illinois	9	-	115	115	-	-	-	-	9	8	115
Indiana	-	-	-	-	-	-	-	-	-	-	-
Iowa	2	150	-	150	-	-	-	-	2	2	150
Michigan	13	755	1,020	1,755	6	80	15	95	19	19	1,850
Minnesota	49	5,027	1,190	6,217	20	4,753	9	4,762	69	51	10,979
Wisconsin	5	490	72	562	-	-	-	-	5	5	562
Region	78	6,402	2,397	8,799	26	4,833	24	4,857	104	97	13,656
Illinois	24	429	894	1,323	1	35	-	35	25	24	1,354
Indiana	1	107	-	107	1	-	50	50	2	2	157
Iowa	9	260	615	875	4	110	155	265	13	9	1,140
Michigan	58	1,127	4,524	5,651	19	80	1,422	1,502	77	77	7,122
Minnesota	183	6,999	8,581	15,580	139	6,492	5,721	12,213	322	212	27,797
Wisconsin	55	1,890	1,205	3,095	-	-	-	-	55	55	3,095
Region	330	10,812	15,819	26,631	164	6,717	7,348	14,065	494	409	40,696

Chemical Eradication of Ribes

Investigations of 2,4-Dichlorophenoxyacetic acid (2,4-D) and 2,4,5-Trichlorophenoxyacetic acid (2,4,5-T) compounds as herbicides were continued. In addition to checking ribes plots treated in previous years, new plots were also established in 1950. These new plots were based on some of the more successful aspects observed in the earlier plots. Efforts were also made to put into practical use those features of chemical treatment of ribes that appeared to have good possibilities in the field.

In checking ribes plots that were treated one year or more earlier it was definitely proven that Ribes americanum and R. hudsonianum can be readily killed with comparatively weak solutions of aqueous 2,4-D sprays. Since the wild black currant is one of the species that is difficult to eradicate by hand because of its profuse sprouting and abundance, it is definitely more economical and feasible to treat it with chemicals. Concentrations of 1,000 parts per million of 2,4-D applied as aqueous foliage sprays anytime during the growing season, successfully kills this species. Either the sodium salt or the ester may be used. The former, which comes in powder form, is used at the rate of 1 ounce (avoirdupois) in 3 gallons of water to give 1,000 p.p.m. The ester comes in liquid form and 1 fluid ounce in 3 gallons of water also gives a concentration of 1,000 p.p.m. This solution was applied to R. americanum in several areas in various states of the Region and excellent results were obtained. A saving of from 20 to 80 percent in labor is realized by treating this species with chemicals rather than pulling them by hand and a more complete kill is achieved.

Where R. americanum and other ribes species that are not as readily killed by chemicals grew on the same area a combination of chemical treatment and hand eradication was used on several areas. Part of the eradication crew was equipped with back-pack pumps and treated the black currants while the rest of the crew used ribes hooks for uprooting the bushes that were more resistant to the chemicals. This proved to be a labor saving method especially where R. americanum grew in well defined clumps.

Concentrations of 1,000 p.p.m. 2,4,5-T are equally effective in killing black currants but as this material is more expensive than 2,4-D there is no point in using it for this purpose.

The use of 2,4-D, however, is definitely limited to the treatment of R. americanum and R. hudsonianum in this Region. It has not proved effective on the various other species of ribes that occur here.

Experiments indicate that 2,4,5-T is more effective on the other ribes species. Seemingly good results have been attained by applying aqueous foliage sprays of 2,4,5-T at concentrations of 6,000 p.p.m. early in the growing season. Two fluid ounces of 40% ester of 2,4,5-T to one gallon of water were used. Sprays were applied to R. hirtellum, R. cynosbati, R. missouriense, R. lacustre, R. triste and R. glandulosum. When applied from the time the bushes first came into leaf until late June a fairly satisfactory degree of kill was obtained. After July 1, when growth had hardened, there was an appreciable amount of sprouting from the crowns. Some sprouting was noted on plants that had been treated before the middle of the season but not in sufficient amounts to rule out the possibility of treating the plants with 2,4,5-T on a practical basis. The economy of treating certain areas chemically even if they must be gone over twice is such as to be preferable over pulling the plants by hand. This is especially

true in areas having such hard-to-pull ribes as R. hirtellum in seed or large patches of R. triste whose roots are entwined with other growth. It is also more economical to spray carpets of seedlings. Searching time is a very important factor in determining whether it is more practical to spray twice than to uproot once. Where hard-to-pull ribes occur in considerable numbers and are fairly easy to find, spraying is definitely more economical than pulling by hand, even if the area must be gone over a second time.

A certain amount of practical spraying of such areas was done in 1950. Preliminary checks indicate that the treatments were fairly satisfactory where properly done. Much of the effectiveness depends upon complete coverage of the plants. Careless application, like improper pulling, results in high survival.

The experimental plots treated in 1949, and re-examined in 1950, bore out the earlier observation that such species as R. hirtellum, R. glandulosum and R. triste can be killed in most cases, using an aqueous foliage spray of 2,4,5-T at a concentration of 6,000 p.p.m. if applied before July 1. There were exceptions; some individual plants seemed to be resistant and others produced sprouts. At present, therefore, it can not be stated unequivocally that 2,4,5-T will give complete kill.

The addition of oil emulsion in the form of summer spray oil is said to aid in thorough and rapid wetting of foliage and stems, to facilitate penetration of waxy plant tissue, to improve "creeping" and subsequent covering of protected and concealed growing points, and to serve as a temporary marker. This summer spray oil emulsion was used in our 1950 applications and results noted so far appear to bear out some of the claims made for the addition of this emulsifier to the spray solution.

The foregoing has dealt with aqueous foliage sprays only. We have found that oil solutions applied as foliage sprays are not as satisfactory as water solutions because of subsequent sprouting.

There is, however, a definite use for oil solutions, using either fuel oil or kerosene as the diluent. This is in the basal stem treatment of ribes. Very encouraging results have been achieved by treating the basal stems of upright growing ribes with small amounts of an oil solution consisting of 24,000 p.p.m. 2,4,5-T in kerosene or fuel oil. Ribes, of upright form, such as the several species of gooseberries and R. americanum and R. lacustre can readily be treated by this method. A small pressure sprayer is used to apply the solution to the basal stems from the ground line to a height of about 12 to 18 inches. The spray is directed from two opposite directions to insure complete coverage of the stems. Only enough solution is applied to wet the lower stems and crown. Thus, even though four times as much of the ester of 2,4,5-T is needed to make a concentration of 24,000 p.p.m., it is still more economical both in time and chemical than foliage sprays where the entire plant must be sprayed. It has been found that this basal stem treatment is effective from early spring to fairly late in the fall. It kills the plants with a minimum of sprouting. Because less dosage is required per plant the application is faster and smaller sprayers can be used. Pressure sprayers of one quart to one gallon capacity are sufficient and their portability facilitates speed of operation. The basal stem application is most adaptable for the treatment of upright growing bushes which grow singly in pastures or on rocky ground. It is impractical for treating low-growing species of ribes or those growing in many-stemmed patches where it would be difficult to hit the numerous stems arising from indistinct crowns.

Chemical treatment of ribes has a definite place in the blister rust control program. If we recognize its limitations and apply it only in situations where its effectiveness has been proved, good results will be obtained. As yet it has not been developed to the point where it can replace eradication of ribes by hand. However, since their introduction a few years ago, the hormone type of chemical weed killers have constantly been improved. Each year more is learned about effective combinations, concentrations, dosages, time of application and methods of application.

While chemical eradication may not entirely take the place of destroying ribes by hand in the North Central Region, it seems reasonable to presume that it will play an increasingly important part in reducing their numbers.

Costs

Cost figures for the Region during 1950 are shown in Tables 12 to 12C, for Milwaukee alone; by States and appropriations; by States and Activities; and by Activities and Appropriations.

A total of \$384,666.15 was spent during the calendar year, with the following percentage distribution by sources:

State Indirect Aid	\$ 14,434.00	3.7 percent
State Direct Aid	80,927.71	21.0 "
Bureau W-a.14	98,762.19	25.7 "
Bureau W-e.14	36,117.50	9.4 "
Forest Service	108,018.29	27.6 "
Indian Service and Tribal	48,406.46	12.6 "
Total	\$384,666.15	100.0 percent

In 1950 the States in Direct Aid contributed \$44,810 more than the Federal Government towards the cooperative control program. The cooperative control dollar in 1950 was made up of 69 cents from the States, and 31 cents from the Federal Government. For the past several years State Direct Aid has increased, until in 1950 it is the highest yet. Direct Aid in 1950 was \$11,828 higher than in 1949; \$25,067 higher than in 1948; \$32,707 higher than in 1947; and \$37,127 higher than in 1946. Thus in the last 5 years State Direct Aid has nearly doubled.

The effective man-day cost of ribes eradication by programs is shown following. Costs are those charged to Ribes Eradication (Table 12C) and Man-Days are taken from Table 2.

Costs Per Effective Man-Day in Ribes Eradication
by Operating Agencies, Calendar Year 1950
North Central Region

<u>Operating Agency</u>	<u>Total Cost of Ribes Eradication</u>	<u>Total Number of Man-Days Used</u>	<u>Cost Per Effective Man-Day</u>
Bureau-State	\$ 94,750.69	7,119	\$13.31
Forest Service	91,601.62	4,667	19.63
Indian Service	39,499.48	4,860	8.13
Total	\$225,851.79	16,646	\$13.57

There is a considerable spread in man-day costs from \$8.13 by the Indian Service, to \$19.63 by the Forest Service, with Bureau-State costs of \$13.31 fairly close to the average.

Costs by the Indian Service were low because most of the funds were spent for unskilled labor, there was very little overhead, and only small costs for travel or per diem, since the Indians lived near areas worked on the reservations.

Costs by the Forest Service were high because most of the work was done on the Superior National Forest where camps were necessary because of inaccessibility. Deductions for meals were insufficient to cover food and food preparation costs, additional overhead in camps was necessary, and considerable travel and per diem charges were unavoidable. Also there was some overhead at Forest Headquarters, which was an added charge.

The Bureau-State cost was higher than the Indian Service because throughout the Region much of the work on State and private lands, due to scattered ribes, was done by scouting which was paid a higher rate than unskilled because of the need for experienced men. Also a considerable amount of travel and per diem was required. Bureau-State cost was less than that of the Forest Service because no camp set up was required and because there was not the same need for overhead costs.

The effect of inflation on costs of ribes eradication is brought out in the table shown following and Charts No. 9 and No. 10, based on that table. The figures given are from Regional Annual Reports for years 1933 to 1950.

Effective Man-Day Costs of Ribes Eradication,
All Agencies, by Calendar Years,
North Central Region

Year	Total Cost of Ribes Eradication	Total 8-Hour Man-Days of Eradication	Total Acres Worked	Per Acre Cost in: Dollars Man-Days		Effective Man-Day Cost
1933	\$ 88,517	37,473	133,978	\$0.66	0.28	\$ 2.36
1934	419,381	148,732	500,220	0.84	0.35	2.82
1935	428,219	183,854	483,877	0.88	0.38	2.33
1936	629,337	190,930	684,630	0.92	0.28	3.30
1937	230,971	73,622	310,519	0.74	0.24	3.14
1938	260,876	84,556	475,437	0.55	0.18	3.09
1939	267,538	83,292	366,019	0.73	0.23	3.21
1940	209,388	68,889	339,509	0.62	0.20	3.04
1941	186,371	54,686	289,756	0.64	0.19	3.41
1942	126,907	25,693	234,881	0.54	0.11	4.94
1943	103,928	15,490	109,219	0.95	0.14	6.71
1944	131,943	19,441	122,014	1.08	0.16	6.79
1945	159,806	23,299	153,160	1.04	0.15	6.86
1946	329,712	39,989	299,856	1.10	0.13	8.25
1947	354,111(a)	27,767	179,201	1.98	0.15	12.75
1948	238,754	21,602	137,634	1.73	0.16	11.05
1949	218,916	18,929	125,304	1.75	0.15	11.57
1950	225,852	16,646	131,925(b)	1.71	0.13	13.57
Total	\$4,610,527	1,134,890	5,077,139	0.91	0.22	4.06

(a) Includes \$27,301 as purchase of 26 new automobiles.

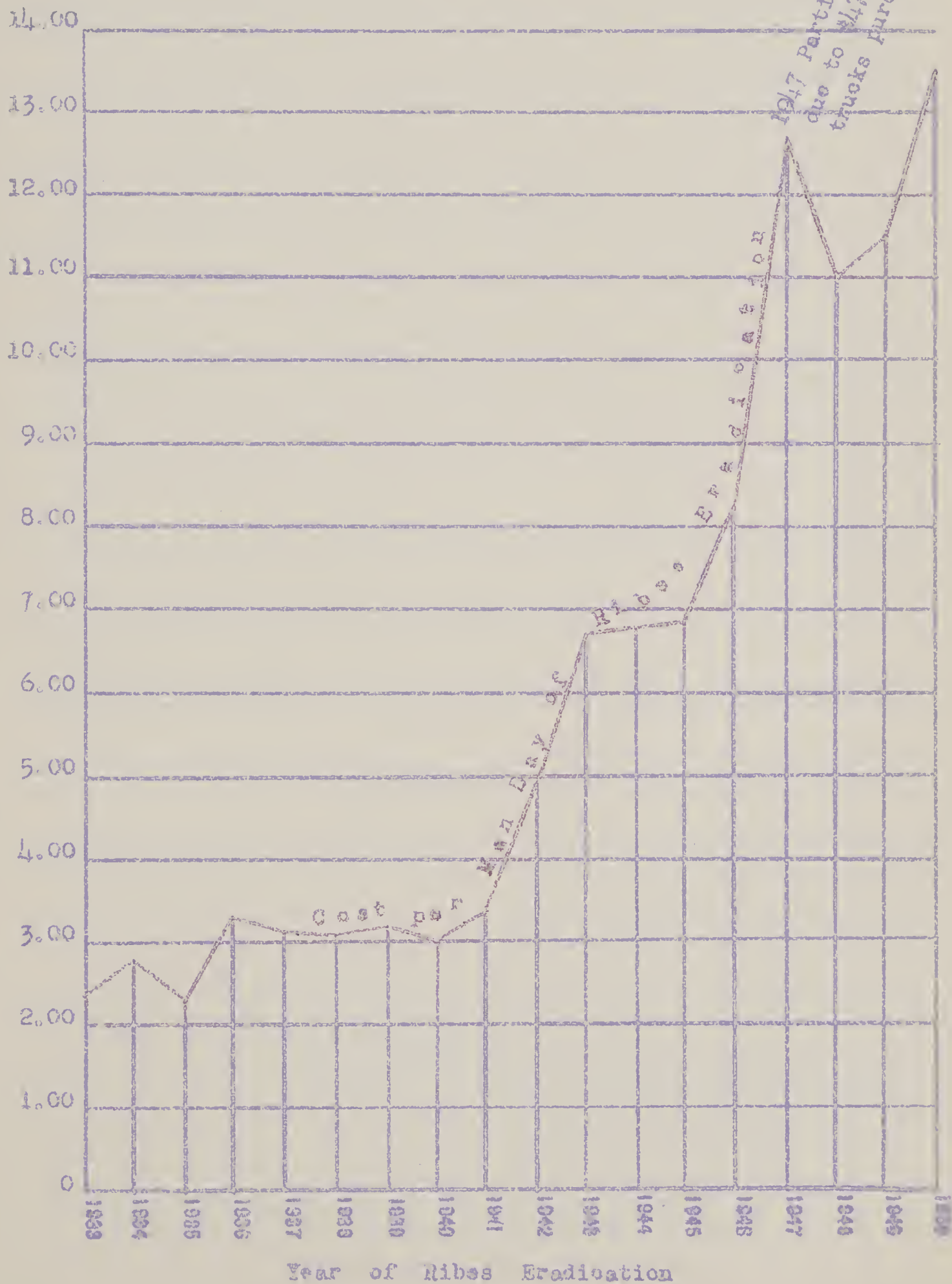
(b) This total is higher than accumulative acreage totals in Annual Report because in 1942 about 330,000 acres of farm land in Iowa previously reported as worked were excluded from cumulative figures. Data for this table include such acreage since acreages reported each year were used.

Cost per Effective Man-Day of Ribes Eradication
All Agencies, by Years

1933 to 1950

NORTH CENTRAL REGION

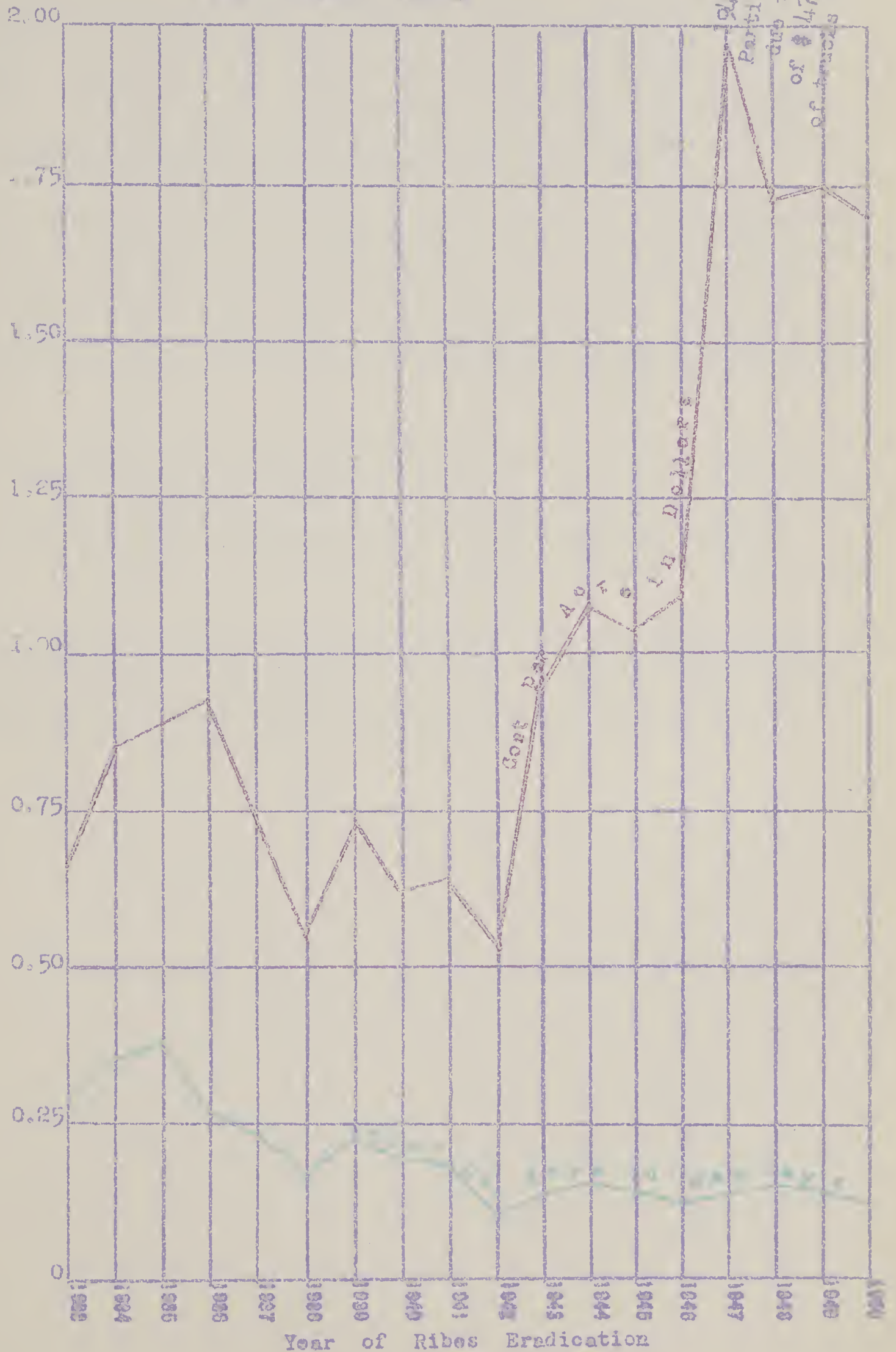
Costs per Effective Man-Days of Ribes Eradication



Costs per Acre of Ribes Eradication,
All Workings, All Ownerships,
Expressed in Dollars per Acre and Man-Days per Acre
1933 to 1950

NORTH CENTRAL REGION

Costs per Acre Worked in Dollars or in Man Days



In Chart 8 the effective man-day cost, derived by dividing total eradication costs by total man-days reported, by years, 1933 to 1950, have been graphed. The inflationary trend is plainly visible. The cost did not vary greatly, although it was upward from 1933 to 1941. From 1941 to 1950, however, the cost rose rapidly with a relatively static cost from 1943 to 1945. As explained on the Chart and in the Table, the high man-day cost in 1947 was chiefly brought about by charging the purchase of 26 new trucks costing \$27,300. Excluding this item the cost per man-day would have been approximately \$1.00 less, or \$11.75, still high. Costs from 1946 to 1950 have continued to increase until in 1950 the effective man-day cost, \$13.57, is the highest on record and nearly 6 times what it was in 1933.

Chart 9 shows a significant comparison of costs of ribes eradication as expressed in (1) dollars per acre worked and in (2) man-days per acre worked. As noted, there is a downward trend in man-days per acre from 1933 to 1950. The cost per acre, either in man-days or in dollars, is greatly influenced by abundance of ribes pulled. This item is not shown in Chart 9. However, we are chiefly interested in the relationship of the dollar cost curve with the man-day cost curve. Since the ribes factor affects each curve the same way, it can here be disregarded.

The two curves run roughly parallel from 1933 to 1942, the period when costs per man-day began to rise quite sharply.

From 1942 to 1950 the cost per acre in man-days varied rather narrowly from 0.11 man-days per acre in 1942 to highs of 0.16 in 1944 and 1948.

Costs per acre in dollars on the contrary during this same period increased very greatly from a low of \$0.54 per acre in 1942 to \$1.98 in 1947, or nearly 4 times as much. This increase was due to inflation. Costs expressed in man-days per acre rather than in dollars is a much better measure of production, especially where the time element is involved.

COOPERATIVE BLISTER RUST CONTROL ON STATE AND PRIVATE LANDS IN THE

NORTH CENTRAL REGION, 1950, WORK PROJECT BLR-3-3

Objective of Cooperative Project

The purpose of this cooperative project is to control white pine blister rust on all non-federal lands, both public and private. Non-Federal Public and Private funds are matched by Regular Federal Funds insofar as appropriations are available. These funds are administered cooperatively by the Bureau of Entomology and Plant Quarantine and State agencies concerned and are spent for control on state and private lands.

Cooperative Expenditures in 1950

During 1950, as noted in Text Table 4, \$80,927.71 were spent as Direct Aid by state and private cooperators, including states, counties, municipalities and individuals, on the protection of state and privately-owned white pine against blister rust. Matching these funds the Bureau of Entomology and Plant Quarantine spent a total of \$36,117.50 of W-c.14 funds. Thus, a total of \$117,045.21 was spent on local control on state and private lands in this Region with the states contributing 69 percent and the Federal Government 31 percent of the total. For the past 5 years state direct aid has been steadily increasing each year. Since 1948 and 1949 state contributions have exceeded Federal contributions towards the cooperative control program.

Control Accomplishments, 1950

In Text Table 1, local control accomplished on Regular-Cooperative funds on state and private lands is shown. It will be noted that under all workings 36,890 acres of white pine were given protection by the removal of 850,524 ribes from 105,570 acres of control area at a cost of 7,112 man-days.

This is an increase of about 14,000 acres of white pine protected and 25,000 acres worked over the cooperative program of 1949. Although state and private agencies increased their cooperative contribution toward the work the increase was not sufficient to offset the drastic cut in Federal funds for work on lands of this class of ownership which was made beginning July 1, 1947.

The Bureau of Entomology and Plant Quarantine used its funds primarily for supervision. State and Cooperative Funds were used in the employment of labor, supervisors, the assignment of state and county men to control work, the employment of owners of white pines, etc. To a greater or lesser degree, owners contributed toward the protection of their own stands in all of the states.

Effect of Reduction in Funds on Cooperative Program

During the Calendar Year 1946 a reasonably adequate program of control on state and private lands was carried out, in general accord with the 5-Year Program. This program had for its purpose the completion of initial work and bringing up-to-date all necessary rework on state and private lands. Funds available for this work in 1947, 1948 and 1949 fell far short of what was needed to live up to this program and to prevent heavy losses of white pine to the rust.

During 1946 we removed ribs from 241,419 acres of control area to protect 77,849 acres of white pine on state and private lands. If work had continued on the 1946 scale in 1947, 1948, 1949 and 1950, we would have worked by now approximately 1,207,100 acres to protect 389,250 acres of white pine during the four year period. Because of reduced funds since 1946 we actually worked 639,046 acres and protected 199,406 acres of white pine in state and private ownership. Thus there were 568,054 acres of control area and 189,844 acres of white pine which were not worked, and which presumably would have been worked if funds had remained at the 1946 level. With rust abundantly present in the region this can only mean that valuable white pine resources are being lost to the rust, due to inability to work them in time.

Status of Control

In order that a complete record may be available for all work done to date under the Regular-Cooperative Program since the Lee Act became operative in 1942, Text Table 2 has been devised. During this period, considering all workings, 356,060 acres have been worked. This is only about 9 percent of the total 4,086,730 acres of state and private lands worked since 1917.

The status of control on state and private lands in this Region as of December 31, 1950, is shown in Text Table 3 and graphically in Chart 8. This total control problem includes 3,085,086 acres, approximately four-fifths of which is around privately-owned white pine.

Of the total control area, 84 percent has been initially worked, and 36 percent is on maintenance. Thus, while progress has been made in the protection of state and privately-owned white pine, there remains a great amount of work to be done before all control work is accomplished, and such stands are in a state of maintenance. The program on non-federal public lands, with 91 percent initially worked and 48 percent on maintenance, is much further advanced than that on privately-owned lands with only 81 percent initially worked and 32 percent on maintenance.

Text Table 1. Summary of Local Control on State and Private Lands,
North Central Region, 1950, Bureau-State Funds, BLR-3.

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man- Days Used
		Natural	Planted	Total			
		<u>Initial Working</u>					
Illinois	Private	-	20	20	95	1,722	5
Indiana	Non-Fed. Public	4	359	363	1,288	3,212	20
	Private	-	283	283	1,771	33,235	81
	Total	4	642	646	3,059	36,447	101
Iowa	Non-Fed. Public	-	23	23	146	23,349	120
	Private	-	22	22	108	17,485	56
	Total	-	45	45	254	40,834	176
Ohio	Non-Fed. Public	10	184	194	714	2,198	17
	Private	-	238	238	945	2,104	14
	Total	10	422	432	1,659	4,302	31
Michigan	Non-Fed. Public	410	321	731	2,294	2,817	41
	Private	120	655	775	4,259	10,381	148
	Total	530	976	1,506	6,553	13,198	189
Minnesota	Non-Fed. Public	233	5	238	516	33,905	285
	Private	13	-	13	37	4,532	51
	Total	246	5	251	553	38,437	336
Wisconsin	Non-Fed. Public	7,364	246	7,610	26,200	252,250	974
	Private	3,444	506	3,950	10,439	32,460	691
	Total	10,808	752	11,560	36,639	284,710	1,665
Region	Non-Fed. Public	8,021	1,138	9,159	31,158	317,731	1,457
	Private	3,577	1,724	5,301	17,654	101,919	1,046
Region Total, Initial		11,598	2,862	14,460	48,812	419,650	2,503

Text Table 1. Summary of Local Control on State and Private Lands,
North Central Region, 1950, Bureau-State Funds., B.L.R.-3.

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man- Days Used
		Protected		Total			
		Natural	Planted				
Second Working							
Illinois	Private	-	3	3	10	1,127	4
Indiana	Non-Fed. Public	14	4	18	139	16	2
	Private	5	403	408	2,270	11,173	75
	Total	19	407	426	2,409	11,189	77
Iowa	Non-Fed. Public	-	35	35	128	29,474	114
Ohio	Non-Fed. Public	-	181	181	848	-	2
	Private	-	251	251	1,093	497	9
	Total	-	432	432	1,941	497	11
Michigan	Non-Fed. Public	7,126	295	7,421	14,993	50,506	566
	Private	854	170	1,024	2,107	29,557	253
	Total	7,980	465	8,445	17,100	80,063	819
Minnesota	Non-Fed. Public	367	13	380	651	28,010	377
	Private	23	63	86	410	12,156	85
	Total	390	76	466	1,061	40,166	462
Wisconsin	Non-Fed. Public	1,559	260	1,819	5,235	44,911	505
	Private	4,484	129	4,613	14,439	11,635	97
	Total	6,043	389	6,432	19,674	56,546	602
Region	Non-Fed. Public	9,066	788	9,854	21,994	152,917	1,566
	Private	5,366	1,019	6,385	20,329	66,145	523
Region Total, Second		14,432	1,807	16,239	42,323	219,062	2,089

Text Table 1. (Cont'd.) Summary of Local Control on State and Private Lands,
North Central Region, 1950, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man-Days Used
		Protected		Total			
		Natural	Planted				
<u>Third and Other Workings</u>							
Illinois	Private	-	74	74	417	19,374	136
Indiana	Non-Fed. Public	129	7	136	900	2,509	14
	Private	40	197	237	2,313	7,881	71
	Total	169	204	373	3,213	10,390	85
Iowa	Non-Fed. Public	35	20	55	189	20,779	129
	Private	-	10	10	25	283	6
	Total	35	30	65	214	21,062	135
Ohio	Non-Fed. Public	284	106	390	1,008	3,635	29
	Private	-	10	10	26	30	Tr.
	Total	284	116	400	1,034	3,665	29
Michigan	Non-Fed. Public	2,117	284	2,401	5,091	13,681	544
	Private	770	10	780	1,573	41,682	455
	Total	2,887	294	3,181	6,664	55,363	999
Minnesota	Non-Fed. Public	13	187	200	436	13,845	171
	Private	16	3	19	111	1,733	16
	Total	29	190	219	547	15,578	187
Wisconsin	Non-Fed. Public	1,879	-	1,879	2,346	86,380	949
Region	Non-Fed. Public	4,457	604	5,061	9,970	140,829	1,836
	Private	826	304	1,130	4,465	70,983	684
Region Total, Third		5,283	908	6,191	14,435	211,812	2,520

<u>All Workings</u>							
Illinois	Private	-	97	97	522	22,223	145
Indiana	Non-Fed. Public	147	370	517	2,327	5,737	36
	Private	45	883	928	6,354	52,289	227
	Total	192	1,253	1,445	8,681	58,026	263
Iowa	Non-Fed. Public	35	78	113	453	73,602	363
	Private	-	32	32	133	17,768	62
	Total	35	110	145	586	91,370	425
Ohio	Non-Fed. Public	294	471	765	2,570	5,833	48
	Private	-	499	499	2,064	2,631	23
	Total	294	970	1,264	4,634	8,464	71
Michigan	Non-Fed. Public	9,653	900	10,553	22,378	67,004	1,151
	Private	1,744	835	2,579	7,939	81,620	856
	Total	11,397	1,735	13,132	30,317	148,624	2,007
Minnesota	Non-Fed. Public	613	205	818	1,603	75,760	833
	Private	52	66	118	558	18,421	152
	Total	665	271	936	2,161	94,181	985
Wisconsin	Non-Fed. Public	10,802	506	11,308	33,781	383,541	2,428
	Private	7,928	635	8,563	24,878	44,095	788
	Total	18,730	1,141	19,871	58,659	427,636	3,216
Region	Non-Fed. Public	21,544	2,530	24,074	63,122	611,477	4,859
	Private	9,769	3,047	12,816	42,448	239,047	2,253
Region Total, All Workings		31,313	5,577	36,890	105,570	850,524	7,112

Text Table 2. Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1950, Bureau-State Funds, B.L.R.-3

State	Ownership Class	Acres White Pine Protected			Acres Worked	Ribes Destroyed	Man- Days Used
		Natural	Planted	Total			
<u>Initial Working</u>							
Illinois	Non-Fed. Public	-	68	68	922	16,435	97
	Private	-	391	391	6,417	136,590	126
	Total	-	459	459	7,339	153,025	323
Indiana	Non-Fed. Public	4	653	657	3,577	5,834	29
	Private	3	3,251	3,254	21,578	112,370	172
	Total	7	3,904	3,911	25,155	118,204	201
Iowa	Non-Fed. Public	60	156	216	1,823	209,025	1,596
	Private	98	155	253	2,348	195,864	1,777
	Total	158	311	469	4,171	404,889	3,373
Ohio	Non-Fed. Public	10	1,688	1,698	6,258	48,812	673
	Private	127	3,204	3,331	21,887	57,657	608
	Total	137	4,892	5,029	28,145	106,469	1,281
Michigan	Non-Fed. Public	4,224	2,984	7,208	25,835	180,972	958
	Private	19,214	5,377	24,591	99,521	891,622	5,624
	Total	23,438	8,361	31,799	125,356	1,072,594	6,582
Minnesota	Non-Fed. Public	3,252	233	3,485	6,143	511,407	5,723
	Private	221	80	301	1,051	89,849	113
	Total	3,473	313	3,786	7,194	592,256	6,236
Wisconsin	Non-Fed. Public	46,064	5,314	51,378	160,311	898,655	5,784
	Private	63,126	2,769	65,895	201,718	789,796	5,203
	Total	109,190	8,083	117,273	362,029	1,688,451	10,987
Region	Non-Fed. Public	53,614	11,096	64,710	204,869	1,871,110	14,199
	Private	82,789	15,227	98,016	354,520	2,264,748	14,575
Region Total, Initial		136,403	26,323	162,726	559,389	4,135,888	29,074

Text Table 2. (Cont'd.) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942 to 1950, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man-Days Used
		Protected		Total			
		Natural	Planted				
Second Working							
Illinois	Non-Fed. Public	102	847	949	3,719	140,235	927
	Private	28	223	251	1,525	26,094	248
	Total	130	1,070	1,200	5,244	166,329	1,175
Indiana	Non-Fed. Public	14	1,230	1,244	6,204	12,511	168
	Private	92	1,667	1,759	11,958	41,410	216
	Total	106	2,897	3,003	18,162	53,921	384
Iowa	Non-Fed. Public	40	152	192	1,263	231,219	1,228
	Private	142	269	411	3,361	242,005	2,079
	Total	182	421	603	4,624	473,224	3,307
Ohio	Non-Fed. Public	-	1,759	1,759	8,460	10,759	289
	Private	290	1,862	2,152	13,335	45,124	609
	Total	290	3,621	3,911	21,795	55,883	898
Michigan	Non-Fed. Public	21,833	4,499	26,332	54,613	334,937	2,417
	Private	36,093	2,635	38,728	118,229	1,091,434	7,965
	Total	57,926	7,134	65,060	172,842	1,426,421	10,382
Minnesota	Non-Fed. Public	6,675	352	7,027	10,169	346,465	3,679
	Private	90	72	162	740	29,358	198
	Total	6,765	424	7,189	10,909	375,823	3,877
Wisconsin	Non-Fed. Public	19,225	6,178	25,403	57,360	595,961	5,457
	Private	45,188	1,291	46,479	133,514	970,425	9,886
	Total	64,413	7,469	71,882	190,874	1,567,386	15,343
Region	Non-Fed. Public	47,889	15,017	62,906	141,758	1,673,687	14,185
	Private	81,923	8,019	89,942	282,662	2,445,900	21,201
Region Total, Second		129,812	23,036	152,848	424,450	4,118,987	35,386

Text Table 2. (Cont'd.) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942 to 1950, Bureau-State Funds, BLR-3

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man- Days Used
		Protected		Total			
		Natural	Planted				
Third and Other Workings							
Illinois	Non-Fed. Public	90	254	344	2,376	100,493	695
	Private	5	671	676	2,969	83,196	747
	Total	95	925	1,020	5,345	183,689	1,442
Indiana	Non-Fed. Public	190	551	741	3,937	5,360	55
	Private	142	380	522	5,206	17,097	119
	Total	332	931	1,263	9,143	22,457	174
Iowa	Non-Fed. Public	481	30	511	1,406	124,909	1,259
	Private	27	14	41	988	23,218	215
	Total	508	44	552	1,794	148,127	1,474
Ohio	Non-Fed. Public	704	875	1,579	3,436	7,319	113
	Private	887	237	1,124	5,733	15,995	224
	Total	1,591	1,112	2,703	9,169	23,314	337
Michigan	Non-Fed. Public	4,933	3,770	8,703	18,109	87,885	1,294
	Private	11,852	289	12,141	35,034	338,280	3,332
	Total	16,785	4,059	20,844	53,143	426,165	4,626
Minnesota	Non-Fed. Public	2,504	366	2,870	3,615	100,139	1,051
	Private	207	378	585	1,564	113,008	742
	Total	2,711	744	3,455	5,179	213,147	1,793
Wisconsin	Non-Fed. Public	6,949	1,810	8,759	14,528	470,031	4,518
	Private	1,668	22	1,690	7,579	86,463	728
	Total	8,617	1,832	10,449	22,107	556,494	5,246
Region	Non-Fed. Public	15,851	7,656	23,507	47,407	896,136	8,965
	Private	14,988	1,991	16,979	58,473	677,257	6,107
Region Total, Third		30,839	9,647	40,486	105,880	1,573,393	15,072

Text Table 2. (Cont'd.) Cumulative Summary of Local Control on State and Private Lands, North Central Region, 1942-1950, Bureau-State Funds, B.L.R.-3

State	Ownership Class	Acres White Pine			Acres Worked	Ribes Destroyed	Man-Days Used
		Protected		Total			
		Natural	Planted				
<u>All Workings</u>							
Illinois	Non-Fed. Public	192	1,169	1,361	7,017	257,163	1,719
	Private	33	1,285	1,318	10,911	215,880	1,421
	Total	225	2,454	2,679	17,928	503,043	3,140
Indiana	Non-Fed. Public	203	2,434	2,637	13,718	23,705	272
	Private	237	5,298	5,535	38,742	170,877	814
	Total	440	7,732	8,172	52,460	194,582	1,086
Iowa	Non-Fed. Public	581	338	919	4,492	565,155	4,057
	Private	267	438	705	6,097	461,087	4,071
	Total	848	776	1,624	10,589	1,026,242	8,128
Ohio	Non-Fed. Public	714	4,322	5,036	18,154	66,890	1,075
	Private	1,304	5,303	6,607	40,955	118,776	1,441
	Total	2,018	9,625	11,643	59,109	185,666	2,516
Michigan	Non-Fed. Public	30,990	11,253	42,243	98,357	603,794	4,639
	Private	67,159	8,301	75,460	252,784	2,321,386	16,921
	Total	98,149	19,554	117,703	351,141	2,925,180	21,560
Minnesota	Non-Fed. Public	12,431	951	13,382	19,927	953,011	10,498
	Private	518	530	1,048	3,355	223,215	1,353
	Total	12,949	1,481	14,430	23,282	1,176,226	11,851
Wisconsin	Non-Fed. Public	72,238	13,302	85,540	232,199	1,985,617	15,359
	Private	110,182	4,082	114,264	342,811	1,046,684	15,662
	Total	182,420	17,384	199,804	575,010	3,032,301	31,021
Region	Non-Fed. Public	117,354	33,769	151,123	394,061	4,440,363	37,619
	Private	179,700	25,237	204,937	695,655	5,307,905	41,883
Region Total, All Workings		297,054	59,006	356,060	1,089,719	9,828,268	79,502

Note: In Text Table 2, work done on state and private lands, by Bureau-State and 3103 Intermingled Lands funds is shown for the period 1942-1950 only, or since the Lee Act became effective. For total work done on state and private lands, 1917 to 1950, see Table 8.

Text Table 3. Status of Control on Non-Federal and Privately-owned White Pine Stands,
North Central Region, December 31, 1950.

Ownership Class	Acres, Total Control Problem				Acres, Initially Worked				Acres, Not Initially Worked				Acres on Maintenance	
	Natural		Total		Natural		Total		White		Control			
	W.P.	W.P.	W.P.	Area	W.P.	W.P.	W.P.	Area	Pine	Area	Pine	Area		
Illinois														
Non-Fed. Public	197	912	1,109	6,203	192	910	1,102	6,089	7	114	543	1,180		
Private	34	843	877	7,226	34	765	799	5,129	78	2,097	47	757		
Total	231	1,755	1,986	13,429	226	1,675	1,901	11,218	85	2,211	590	1,937		
Indiana														
Non-Fed. Public(a)	99	3,070	3,169	18,858	99	2,958	3,057	17,971	112	887	2,384	14,857		
Private	224	6,834	7,058	72,852	224	5,415	5,639	60,582	1,419	12,270	4,862	46,910		
Total	323	9,904	10,227	91,710	323	8,373	8,696	78,553	1,531	13,157	7,246	61,767		
Iowa														
Non-Fed. Public	348	231	579	3,568	348	230	578	3,516	1	52	11	50		
Private	366	4,945	5,311	46,433	316	2,512	2,828	30,541	2,483	15,892	1,590	18,791		
Total	714	5,176	5,890	50,001	664	2,742	3,406	34,057	2,484	15,944	1,601	18,841		
Ohio														
Non-Fed. Public(b)	854	7,133	7,987	53,114	854	4,858	5,712	42,558	2,275	10,556	2,253	16,134		
Private	2,304	10,335	12,639	156,231	2,195	7,683	9,878	131,911	2,761	24,320	4,702	67,742		
Total	3,158	17,468	20,626	209,345	3,049	12,541	15,590	174,469	5,036	34,876	6,955	83,876		
Michigan														
Non-Fed. Public	92,628	30,518	123,146	300,353	89,358	29,327	118,685	282,936	4,461	17,417	64,581	150,712		
Private	194,726	14,832	209,558	716,295	173,070	12,615	185,685	626,529	23,873	89,766	59,539	317,142		
Total	287,354	45,350	332,704	1,016,648	262,428	41,942	304,370	909,465	28,334	107,183	124,120	368,854		

(continued)

Text Table 3. (Cont'd.) Status of Control on Non-Federal and Privately-owned White Pine Stands,
North Central Region, December 31, 1950.

Ownership Class	Acres, Total Control Problem			Acres, Initially Worked			Acres, Not Initially Worked		Acres on Maintenance		
	Natural W.P.	Planted W.P.	Total W.P.	Natural W.P.	Planted W.P.	Total W.P.	White Pine Area	Control Area	White Pine Area	Control Area	
Minnesota											
Non-Fed. Public	47,359	6,407	53,766	112,064	32,624	37,998	74,397	15,768	37,667	12,754	24,071
Private	85,189	370	85,559	272,204	65,872	66,212	204,518	19,347	67,686	14,977	36,271
Total	132,548	6,777	139,325	384,268	98,496	104,210	278,915	35,115	105,353	27,731	60,342
Wisconsin											
Non-Fed. Public	88,509	15,581	104,090	291,909	87,160	102,339	289,543	1,751	2,366	61,049	173,117
Private	253,088	9,630	262,718	1,027,776	211,502	219,389	803,266	43,329	224,510	100,941	350,978
Total	341,597	25,211	366,808	1,319,685	298,662	321,728	1,092,809	45,080	226,876	161,990	524,151
Region											
Non-Fed. Public	229,994	63,852	293,846	786,069	210,635	269,471	717,010	24,375	69,059	143,575	379,731
Private	535,931	47,789	583,720	2,299,017	453,213	490,430	1,862,476	93,299	436,541	186,658	739,281
Region Total	765,925	111,641	877,566	3,085,086	663,848	759,901	2,579,486	117,665	505,600	330,233	1,119,016

Includes U. S. Army

lands as follows:

(a)	=	42	42	37	202	5	152	37	201
(b)	=	156	156	136	1,237	20	438	51	474

Text Table 4. Costs of Cooperative Control Program, B.L.R.-3,
North Central Region, Calendar Years 1941 - 1950.

State	(Calendar Years)	State Direct Aid	Bureau 3103, 73.14 and W-s.14 Funds	Bureau Intermingled Lands 3103 Funds	Total
Illinois	1941 - 1949	\$36,355.65	\$22,473.12	-	\$58,828.77
	1950	5,201.42	433.11	-	5,634.53
	Total	41,557.07	22,906.23	-	64,463.30
Indiana	1941 - 1949	8,677.89	11,650.64	-	20,328.53
	1950	5,997.51	1,653.91	-	7,651.42
	Total	14,675.40	13,304.55	-	27,979.95
Iowa	1941 - 1949	17,728.37	52,561.09	-	70,289.46
	1950	2,286.60	3,715.77	-	6,002.37
	Total	20,014.97	56,276.86	-	76,291.83
Ohio	1941 - 1949	5,985.36	40,378.17	-	46,363.53
	1950	429.36	3,734.93	-	4,164.29
	Total	6,414.72	44,113.10	-	50,527.82
Michigan	1941 - 1949	76,269.69	124,742.76	17,660.34	218,672.79
	1950	20,893.27	7,847.33	-	28,740.60
	Total	97,162.96	132,590.09	17,660.34	247,413.39
Minnesota	1941 - 1949	69,926.54	122,227.72	32,490.17	224,644.43
	1950	13,227.35	7,681.70	-	20,909.05
	Total	83,153.89	129,909.42	32,490.17	245,553.48
Wisconsin	1941 - 1949	133,115.82	139,632.27	15,799.59	288,547.68
	1950	32,892.20	11,050.75	-	43,942.95
	Total	166,008.02	150,683.02	15,799.59	332,490.63
Region	1941 - 1949	348,059.32	513,665.77	65,950.10	927,675.19
	1950	80,927.71	36,117.50	-	117,045.21
Region Total		428,987.03	549,783.27	65,950.10	1,044,720.40

Text Table 5. Federal and State Cooperative Funds for Control Work on State and Private Lands, by Calendar Years, 1941 to 1950, North Central Region

Calendar Year	State Direct Aid	Federal Cooperative Funds	Total	Portion of Dollar Spent by:	
				State	Federal
1941	\$ 11,634	\$ 252	\$ 11,886	\$0.98	\$0.02
1942	25,968	21,793	47,761	0.54	0.46
1943	22,039	24,882	46,921	0.47	0.53
1944	25,134	29,388	54,522	0.46	0.54
1945	46,303	63,176	109,479	0.42	0.58
1946	43,801	170,038	213,839	0.20	0.80
1947	48,221	126,900	175,121	0.28	0.72
1948	55,860	36,301	92,161	0.61	0.39
1949	69,099	40,936	110,035	0.63	0.37
1950	80,928	36,117	117,045	0.69	0.31
Total	\$428,987	\$549,783	\$978,770	\$0.44	\$0.56

Information in Text Table 5 is shown graphically in Chart 11. Several points are emphasized:

1. In 5 of the 10 years, namely, 1941, 1942, 1943, 1949 and 1950, State Direct Aid was greater than the Federal contribution.

2. There has been quite a steady increase in State participation with the largest contribution from the States coming in 1950. This year also showed the lowest Federal contribution since 1944.

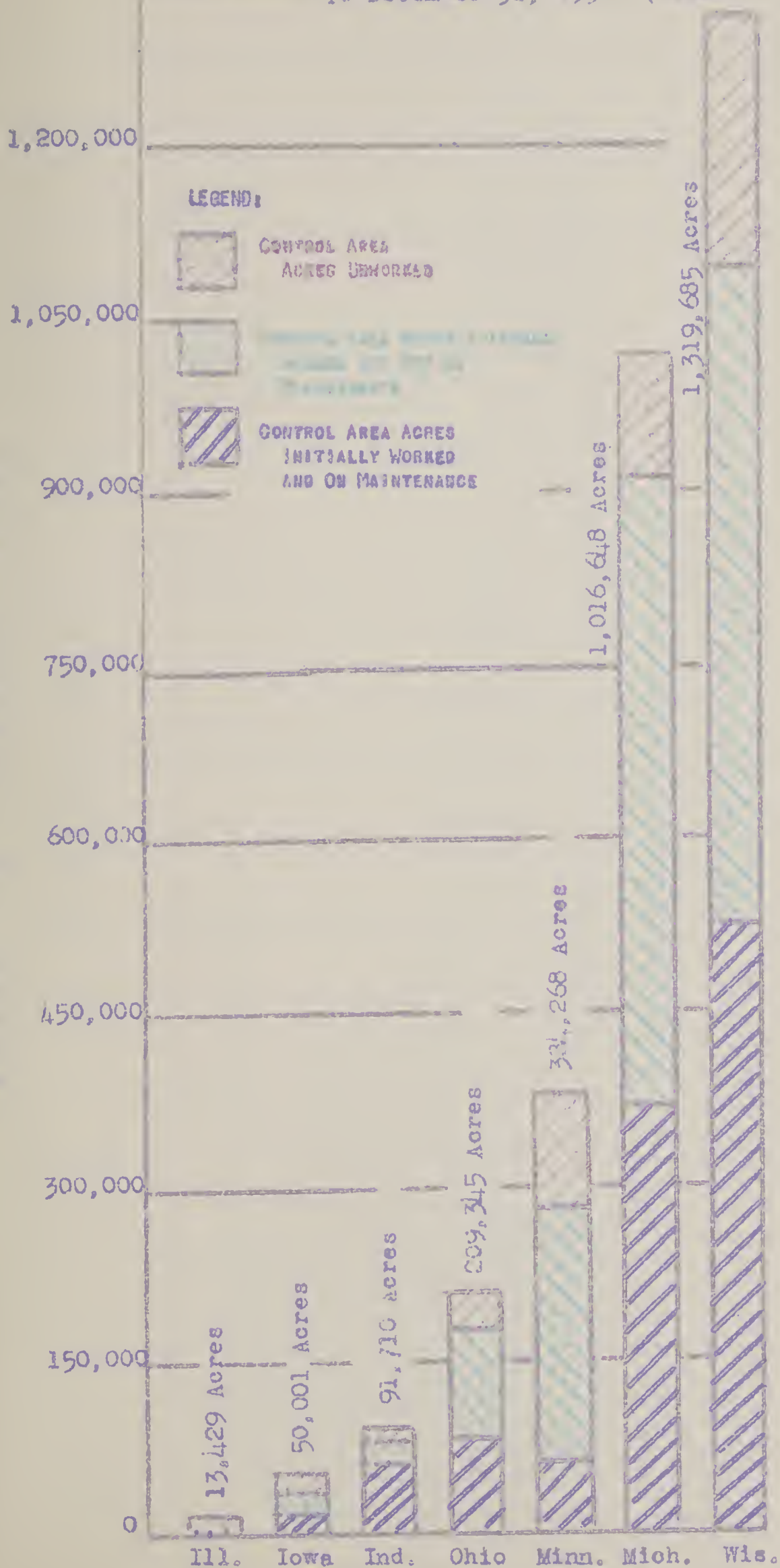
3. The largest Federal contributions came in 1946 and 1947.

Status of Control for State and Private Lands

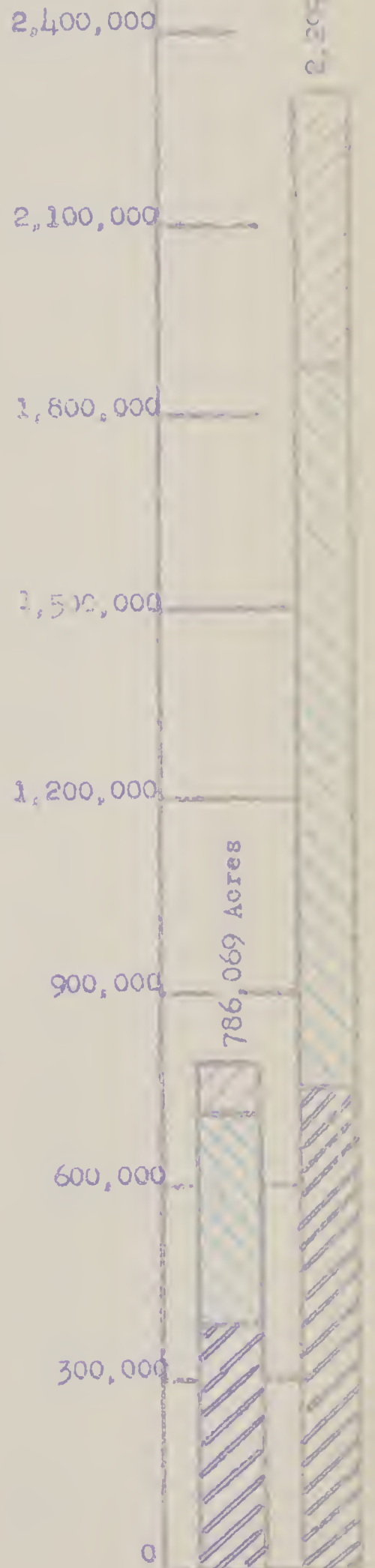
By STATES NORTH CENTRAL REGION

To December 31, 1950 (Based on Text Table 3)

ACRES IN CONTROL AREA



ACRES IN CONTROL AREA



Non-Fed. Public
REGION

Federal Cooperative and State Direct Aid Funds
Spent for Control Work on State and Private
Lands, by Years,
1941 to 1950

NORTH CENTRAL REGION

EXPENDITURES

200,000

175,000

150,000

125,000

100,000

75,000

50,000

25,000

0

'41 '42 '43 '44 '45 '46 '47 '48 '49 '50

Calendar Year Expenditures Made

Average
Year

Legend:

\$97,877 Total Coop.
Funds Spent.

Federal
Cooperative
Funds

\$11,886

\$47,761

\$46,921

\$54,522

\$109,479

\$213,839

\$175,121

\$92,161

\$110,935

\$117,045

1941
1942
1943
1944
1945
1946
1947
1948
1949
1950

BLISTER RUST CONTROL ON NATIONAL FORESTS

NORTH CENTRAL REGION, 1950

Objective

The protection of valuable white pine stands from blister rust by the removal of ribes from within infecting range of the trees is being continued on all of the National Forests of the Region. Ribes eradication work is up to schedule on all the Forests with the exception of the Superior. The objective is to put areas on a maintenance basis as soon as possible. The term "maintenance", as used in blister rust control, refers to a condition where no further ribes eradication work is believed necessary to bring the present crop of pine through to merchantable size without serious losses from blister rust, unless disturbances, such as logging or fire, bring back ribes.

Memorandum of Understanding

Control work on National Forest lands is performed through a written Memorandum of Understanding between the Forest Service and the Bureau of Entomology and Plant Quarantine. The Forest Service is responsible for selection of pine areas to be protected, employment of labor and supervision and operation of camps. The Bureau is responsible for preparing work plans and maps, which it submits to the Forest Service for approval, keeping records, training labor and supervision, checking for adequacy of control work and making reports.

General Status of Control

Of the twelve National Forest units in the Region only nine are concerned with blister rust. The Shawnee, Hoosier and Wayne each have only a very small acreage of planted white pine, very few ribes, and no known blister rust infection. For all practical purposes the white pine in them is on maintenance. As one goes farther North he will see more white pine, find greater numbers of ribes and observe more blister rust infection until he reaches the Superior which excels in all three.

The status of blister rust control on the individual Forests roughly follows the same geographical pattern ranging from 100 percent of the white pine on maintenance on the Hoosier and Wayne National Forests, to only 16 percent on the Superior in Minnesota.

The problem on the Superior National Forest is of such magnitude that it has not been possible with funds available in the last few years to keep up with the disease. Many unprotected stands of young pine are being lost to the rust and another considerable acreage of initially protected pine is not being reworked in time to prevent the reestablishment of ribes. On recognition of the fact that the control program on the Superior is larger than the annual allotment of funds will permit to catch up with it, a more realistic approach to the problem has recently been inaugurated. Since it is impossible to protect all of the worthwhile white pine on the Forest a resurvey program is in progress which will permit a review of areas on a priority basis. Only areas which are to be managed for white pine will be included in the control program and those on a basis of relative cost of protection. Thus the size of the control problem will be reduced and be commensurate with the funds available for doing control work.

Text Table 8 shows the General Status of Control on each of the National Forests.

Rust Conditions in 1950

In general, weather conditions were not favorable for rust spread and development in 1950. The spring was late. According to Duluth records, it was the latest in 75 years. The summer was generally dry, and the fall cool and dry. Throughout the Region less acetal production than usual was reported. Except in the north, along Lake Superior, where conditions are favorable almost every year, there was less than the usual amount of rust on ribes.

Control Work in 1950

Labor was available on all Forests although on the Superior, students made up most of the labor. The amount of eradication work done was determined by the work scheduled for 1950 and by funds available for doing the work. Supervision was adequate and Bureau personnel was able to devote as much time as was necessary to training crews, giving general direction to the work and checking it. In general, scheduled control work on all the Forests was completed, and it checked out very satisfactorily. Local labor was employed except on the Superior where in addition to local men much of the work was done out of three Forest Service camps.

Compared with the previous year, accomplishment in 1950 was decidedly less, both in acres worked, and man-days used, than in 1949. Specifically, considerably less man-days were employed on the Superior, Chequamegon and Upper Michigan National Forests in 1950 than in 1949.

Local Control Performed on National Forests,
North Central Region, 1950

Eradication	Acres White Pine Protected	Acres Worked	Ribes Destroyed	Man-Days Used
Initial	2,391	5,304	216,015	1,285
Reeradication	5,359	8,987	177,725	3,389
Total	7,750	14,291	393,740	4,674

The proportion of reeradication work being done compared to initial work is a good index of progress being made in catching up on the control problem. It indicates that worthwhile new areas are being taken care of and that sufficient funds are left to rework other valuable areas before ribes become re-established. Even when all present initial work is done there will always be some initial work each year because of new white pine areas coming in through natural reproduction or planting. The amount of rework to be done will diminish as more areas are put on a maintenance basis. Right now however, we are still trying to catch up on the rework of areas that were initially protected in the hey-day of Emergency programs when C.C.C. and W.P.A. labor was plentiful.

Text Table 6 shows the amount of Local Control work done on each Forest in 1950.

Text Table 7 shows the quality of work done. It will be noted that all of the work done in 1950 on all Forests except the Chippewa checked well within the required standard of 25 feet of live stem or less per acre remaining after eradication. Only one area (13 acres) on the Chippewa had more than the allowable maximum F.L.S. per acres remaining. All in all a high quality of work was done on National Forests in 1950. Text Tables 9 and 10 show all ribes eradication work done on the National Forests from the inception of the control program through 1950. Text Table 11 shows Forest Service expenditures charged to blister rust control in 1950.

A resume of the Status of Control work done, and recommended plans on each Forest follows. A more detailed account can be had by reading the separate individual report for each Forest.

Status of Control by Forests

Shawnee, Hoosier and Wayne National Forests

No blister rust control work performed in 1950. None needed as the small white pine acreage has few or no ribes and is free of the blister rust disease. White pine growing conditions are excellent on the Hoosier and Wayne especially, due to the long growing seasons, and adequate moisture. Leader growths of 4 feet annually are not uncommon. White pine yields from plantations at 50 years of age of 50M board feet per acre have been reported.

Huron National Forest - Michigan

The Huron contains 2,466 acres of white pine that is considered as worth protecting from blister rust. This is an increase of about 600 acres of planted white pine in 1950. Roughly one-fifth of the total is natural pine and four-fifths is planted. All but 15 acres have been given initial protection and 67 percent is on maintenance. In 1950, six areas were initially worked involving the removal of 1,490 ribes from 1,490 acres at a cost of 30 man-days. The work was done by one man paid from Forest Service funds. It was checked and found satisfactory by the District Agent. All six areas were placed on maintenance after working.

Rust on ribes was light this year and there was no significant increase in pine infection. It is generally light and occurs in only a few widely separated areas. Cankers, chiefly of 1942-1943 origin, were found in 1950 in three plantations, on a few trees.

For 1951 a small amount of preeradication survey work is recommended for 4 possible areas and one plantation of 290 acres should be post-checked. It is estimated that about 20 man-days of eradication work will be sufficient to maintain the schedule of protection on the Huron for 1951.

Manistee National Forest - Michigan

The Manistee is the most suitable Forest in the Region for the planting of white pine. It now contains 20,892 acres of planted white pine or about 40 percent of the total white pine acreage planted on all the National Forests in the Region. There are 3,169 acres of natural white pine making 24,061 acres in all in the control problem. Natural white pine is increasing through natural reproduction favored by recent wet seasons. Control work is up to schedule with 100 percent of the white pine initially protected and 95 percent on maintenance.

Rust conditions on the Manistee are not severe. Much of the pine grows on well drained sandy soil under oak, a type which does not harbor ribes to any extent. It is only in isolated low places and on typical hardwood soils where they occur in any number. Pine infection is lightly scattered over the Forest but not intensive enough to do commercial damage. A few nearby gooseberries are usually responsible.

Preeradication surveys made in 1950 resulted in the mapping of 14 areas consisting of 40 acres of natural pine and 641 planted, or a total of 681 acres. Post checking was done of one area in the Manistee District and 16 areas on the White Cloud District, for 740 acres of natural pine having 2,075 acres of control area. All of these areas had been worked previously when they were under ownership other than Forest Service. Following post-check, 9 areas with 390 acres of white pine and 1,000 acres of control area were placed on maintenance.

Initial ribes eradication was performed on 14 areas, second working on 7 areas and third working on one area. A total of 1,031 acres of pine was protected by the removal of 5,618 ribes from 2,860 acres of control area using 35 man-days. The work was done by one experienced man paid from Forest Service funds. All worked areas were checked by the District Agent and found to be satisfactory.

To keep the control work up to schedule it is recommended that preeradication surveys be made of all white pine plantations planted in the fall of 1950 and spring of 1951 and perform whatever ribes eradication work might be needed on them. Also check for any areas that may recently have been transferred from private to federal ownership and work if necessary. It is estimated that only about 30 man-days of ribes eradication work may be needed to protect the federally-owned pine on this Forest in 1951. Nursery sanitation, using about 20 man-days should be performed around the Chittenden Nursery.

Marquette National Forest - Michigan

The Marquette has 6,658 acres of natural white pine and 4,981 acres of planted. All of it has been given initial protection and about half of it is on maintenance. Pine infection can be found generally scattered over the Forest but not in damaging amounts. In unprotected scattered pine blister rust damage is quite severe but only an occasional canker can be found in protected areas. There is one exception. One pine area, or mixed plantation of white and red pine, has many cankers throughout. The trees are about 10 feet high and three inches at the base. Many of them have stem cankers within one foot of the ground. Over 95 percent of the infection occurred before ribes eradication was performed.

The ribes population on the Marquette runs from very light on the sandy soils to very heavy in the limestone rock county. Pine areas in the latter locations must be worked several times before they can be placed on maintenance.

Local control work performed in 1949 brought the work on the Marquette up to schedule and no work was done in 1950, since none was recommended until 1952 or possibly 1951.

Both the Moran and Raco Districts are now up to date with no more eradication work anticipated for Raco until 1951 and Moran in 1954.

Hiawatha National Forest - Michigan

White pine has been reproducing steadily on the Hiawatha in the last few years. This increase is due to increased natural reproduction. In addition to the added acreage it is estimated that 60 percent of the previously reported acreage has improved in stocking. The future of white pine on this Forest is good.

The Hiawatha now contains 13,508 acres of good federally-owned white pine of which 10,779 is natural, and 2,729 is planted. Practically all of it is in the younger age classes. All but 378 acres has been given initial protection and nearly 45 percent is on maintenance.

Pine infection is lightly scattered all over the Forest but no serious commercial damage is present in any of the protected stands. Wherever ribes occur near white pine the inevitable blister rust "flag" may be seen.

Ribes are comparatively light on the Hiawatha. There are sites with ribes populations in all degrees but they are well-defined and the cost of eradicating them is very reasonable.

Very little survey work was performed, a post-check was made of two areas showing 86 acres of white pine. Due to natural seeding, the white pine acreage in 1950 had nearly doubled to 155 acres.

According to plans made in 1949, ribes eradication on the Upper Michigan National Forests in 1950 was concentrated on the Hiawatha, and none was done on the Marquette. In 1950 one area was worked initially and two areas reworked. In all 585 acres of white pine were protected by removing 26,122 ribes from 1,155 acres at a cost of 178 man-days.

A relatively large work plan has been drawn up for 1951. In order to bring work up to date would require working of 25 areas with 12,000 acres of control area at a cost of 848 man-days. Areas are listed according to priority in order to best utilize funds available.

Ottawa National Forest - Michigan

The Ottawa has more ribes and more blister rust infection than any other National Forest in Michigan. It has 11,410 acres of federally-owned white pine in its blister rust control problem. All of these have been given initial protection and 43 percent of the total acreage is on maintenance. The largest part of the white pine is made up of natural stands of saplings and poles. A few good cone crops during the recent wet weather cycle have favored reproduction.

Blister rust on pine can be found in every stand on the Forest. Timely ribes eradication has prevented serious commercial damage in the worked areas but some of the unprotected stands have a high degree of infection.

Infection on ribes is usually heavy throughout the Forest every year. This condition makes it imperative that the footage of ribes live stem per acre be reduced as much as is economically possible on worked areas and it must be kept well below the Regional standard of 25 F.L.S. per acre.

Due to the heavy clay type of soil in most parts of the Ottawa, ribes are numerous and have luxurious growth. It takes several workings to bring most of the areas to a maintenance status. It is encouraging to note the great reduction in the number of ribes bushes destroyed on second and succeeding workings compared with those found on initial work. Great care must be taken to get the roots to prevent a ribes come-back and this is especially difficult on the heavy, rocky soils found on the Ottawa. In the cumulative summary of control work (Text Table 9) in initial working ribes averaged 148 bushes per acre throughout the Forest and only 47 per acre in second working, and 14 for third working. A sound schedule of control work is being maintained and each year the problem is becoming less difficult.

1

Ribes eradication work in 1950 was started in the Iron River District on June 14 with a crew of 25 men reporting for work. Later 5 more men were added. On the Ontonagon District a crew of 13 completed work in about one week starting on May 31. On the Watersmeet District 13 women under a male strawboss worked in heavy ribes country, starting on July 5. The crew did acceptable work, although a few portions had to be reworked. As seen in Text Table 6, to protect 1,433 acres of white pine, 45,663 ribes were removed from 2,680 acres of control area at a cost of 710 man-days.

A schedule of work recommended for the 1951 season proposes the working of 16 areas involving 4,378 acres to be worked at an estimated expenditure of 1,142 man-days. Contract ribes eradication may be tried on some areas on the Ottawa.

Nicolet National Forest - Wisconsin

The total control problem on the Nicolet includes 12,029 acres of white pine of which roughly half is natural and the other half is planted pine. Ninety-nine percent of this acreage has been given initial protection and 42 percent is on maintenance.

Natural restocking of white pine continues to increase, particularly on the Lakewood District, wherever seed trees are present and the site is favorable. Planted pine however is not doing as well and the discarding of some plantations from the control problem has been necessary. Encroachment of brush and hardwood browsing, and blister rust damage are all factors contributing to this acreage loss. Growth and survival are good, however, wherever the site is favorable. Ribes are generally distributed over the Forest, more abundant in swamp and hardwood types, and scarce to absent on the lighter soils.

Blister rust infection on pine is prevalent throughout the Forest and is doing considerable damage in unprotected stands. Recently a large number of new cankers have been noted particularly on 1944 and 1945 wood indicating that infection conditions were very favorable for the spread of the rust in those years. Fortunately most of the worthwhile areas had been given initial protection by that time and it is only in unprotected stands and in areas where rework has been delayed too long that the wave of infection is doing serious damage.

The only control work done in 1950 was the third working of 4 plantations of 1,035 acres. To protect this acreage 30,109 ribes were removed from 1,690 acres of control area at a cost of 591 man-days.

A long time work plan to 1957 has been prepared. Work to June 30, 1951 recommended includes the working of 1,240 acres using 380 man-days on the Lakewood District. For Fiscal Year 1952 working of 1,240 acres on the Eagle River and Florence Districts, using 440 man-days is recommended.

Chequamegon National Forest - Wisconsin

There are at present 21,080 acres of white pine in the control problem of the Chequamegon Forest. About three-fourths of this acreage is natural pine and one-quarter planted. Roughly 80 percent is located in the Washburn District. Most of this pine is in the younger age classes ranging from seedlings to poles. In recent years because of adequate fire protection, favorable climatic conditions and trees coming of seed-bearing age, there has been a pronounced increase in white pine reproduction. There is every indication that the white pine acreage and degree of stocking will continue to increase on this Forest.

Over 96 percent of the pine has been given initial protection and 51 percent is on maintenance. White pine infection on the Forest varies in intensity from very light to medium heavy depending upon ribes distribution and time of eradication. Many small inadequately stocked areas not included in the control problem and therefore never protected have a high degree of infection. Some infection can also be found in certain protected stands. This can be attributed to one of two causes: either the rust came in before initial work was done or there was too long a period between initial and rework. The latter was sometimes unavoidable because of the scarcity of labor during the war years. In the early 1940's it was almost impossible to maintain a schedule of rework on the great number of areas that were initially protected during the period of emergency programs when C.C.C. and W.P.A. labor was plentiful.

The control schedule on the Forest is now again on an even keel. In 1950 a satisfactory amount of work was done. Eradication crews worked on four of the five Ranger Districts, Glidden, Hayward, Park Falls and Washburn. A total of 915 acres of pine was protected by removing 170,089 bushes from 1,562 acres of control area at an expenditure of 813 man-days. This is an average of 109 bushes per acre. A good grade of labor was available and supervision was adequate. Checking after eradication proved that very good work was done. All areas checked out with less than 15 F.L.S. per acre remaining, a comfortable margin from the 25 feet allowed.

During October a canker pruning project was conducted on a protected white pine plantation in the Washburn District. At a cost of 156 man-days, 12,188 cankers were removed from 9,510 trees, thereby saving them. Also 9,510 infected trees were cut down.

Recommended for work to June 30, 1951 is the balance of fiscal year work not yet done, involving about 4,000 acres and using 670 man-days. For the fiscal year 1952 work on 4,313 acres using 1,200 man-days is recommended. This work is planned for the Glidden, Hayward and Washburn Ranger Districts. Good, experienced blister rust workers are available in towns of Cable and Hayward.

Superior National Forest - Minnesota

The Superior offers a challenge to Blister Rust Control men. It has a lot of pine, much of it off the beaten path, a heavy ribes population and climatic conditions that are extremely favorable to the spread of the rust. Of the 64,159 acres of white pine included in the control problem in 1950, 59 percent has been given initial protection and 16 percent was on maintenance. This in spite of the considerable control program carried on during C.C.C. and W.P.A. days. Obviously, with considerably less regular funds that are currently available it would be impossible to make substantial progress in protecting all of the good white pine on the Superior. In fact it is difficult with the funds now available annually to even keep abreast of the rework that must be done on areas worked initially five or more years ago, let alone giving initial protection to new areas. As natural reproduction keeps coming in old areas are becoming better stocked and new areas are becoming established.

To take a more realist view of the problem and use the blister rust control dollar where it will do the most good it was decided early in 1949 to re-evaluate the pine areas and place them on a revised priority basis. Since with the present annual allotment of funds it would not be possible to give protection to all the good areas it is just good business to provide and maintain protection on the very best areas first.

Accordingly a new survey was undertaken in 1949 and continued in 1950. Trained field crews not only mapped the pine areas but obtained the latest information on age class, degree of stocking, amount of pine infection, ribes conditions and probable cost of protection. Special emphasis was also placed on kind and amount of other valuable species in the stand. Costs of protecting the white pine are weighed against returns that might be expected if the white pine were lost. Where it is found that a fair return can be expected even though the stand is not managed for white pine the area is dropped from the blister rust control problem in favor of the other species.

Surveys of this kind conducted in 1949 and 1950 and a further review of existing records decreased by 10,644 acres in 1949 and 10,362 acres in 1950, or about 25 percent, the white pine in control problem. Some of the principle reasons for this reduction were as analyzed in 1949:

1. Overvaluing white pine and undervaluing other associated species in the original survey. (67.5% reduction)
2. Excessive amount of rust present. (10.0%)
3. More complete data in the new surveys. (9%)
4. W. P. Planting Sites not Planted. (7.5%)
5. Inaccessible pine located in roadless and no-cut areas. (3.5%)
6. Plantation failures. (1.0%)
7. Cutting and logging. (1.0%)
8. Too many ribes, areas too small to protect, etc. (0.5%)

While there may be a small further revision downward in the control problem in 1951, it is believed this reduction will be small.

Rust conditions on the Superior are more pronounced than anywhere else in the Region. Pine infection in varying degrees occurs in nearly every stand. The records show that 2,419 acres of unprotected white pine have been removed from the control problem because of excessive rust damage. Another considerable acreage of white pine reproduction has never been mapped because the rust has taken its toll of young seedlings before enough of them could become established to meet stocking requirements. On the other hand disease surveys show that losses from the rust have been kept down to less than 10 percent in stands where initial and the necessary reworkings have been done in time.

Local control in 1950 gave protection to 1,420 acres of pine. Ribes eradication work was done on the Aurora, Gunflint, Isabella, Tofte and Mesaba Districts. A total of 87,057 ribes were destroyed by working 1,727 acres of control area at an expenditure of 1,906 man-days. The work was done out of two Forest Service Camps, one each on the Gunflint and Isabella Ranger Districts and by local men commuting from their homes.

Very good quality work was performed. Of the 1,727 acres worked and checked none exceeded 15 F.L.S. per acre after working. There was an average of only 1.7 bushes, and 2.5 F.L.S. per acre after eradication. This is best record of effective ribes eradication since work started in 1933.

Canker pruning was done on one protected area on the Gunflint Ranger District in late September. To save 812 saplings, 2,436 cankers were removed at a cost of 11 man-days.

Work plans for 1951 include the completion of white pine reappraisals. A work plan, listing areas to be worked by priorities by Districts has been prepared. If funds are available plans have been made for work on 6 Ranger Districts, to protect 3,214 acres of white pine by working 4,575 acres at an estimated cost of 3,651 man-days.

Chippewa National Forest - Minnesota

The Chippewa has 13,163 acres of white pine in its control problem; 11,433 natural and 1,730 planted. Much of it grows in association with older red pine under which it does very well and eventually makes up the larger portion of the succeeding stand. In such situations ribes are usually scarce and cost of control is very nominal.

The status of control is above average with 84 percent of the pine protected initially and 65 percent on maintenance. Control work on this Forest however, must be kept right up to schedule as the abundance of rust destroys unprotected pines. Plantations on the Forest have been hardest hit. White pines were planted on the heavier soils which support ribes in greater abundance than lighter soils. Then too the planted areas had less cover than the natural stands, which exposed the trees to more infection because of the lack of screening. On the Chippewa, as in any of the other Forests in the northern part of the Region, no young white pine stand can be expected to reach commercial maturity if ribes are permitted to remain within infecting range of the trees.

Survey work on the Forest is up to schedule and the pine acreage listed in the control problem is pretty well stabilized. Doubtful areas have been discarded as a result of reappraisals during the last two years and there will be an increase of worthwhile acreage as new reproduction continues to come in.

Local control work in 1950 was late in getting under way due to the lateness of the season. Work was done on the Cut Foot Sioux, Cass Lake, Bena, Remer and Walker Districts by local men commuting from their homes. One man eradication crews were used on all districts except the Cass Lake, where a four-man crew was used. The one man method proved very satisfactory as it is adapted to areas supporting small ribes populations which are common on the Chippewa. A total of 646 acres of pine was protected by removing 27,735 ribes from 1,127 acres of control area at an expenditure of 1,410 man-days. Most of the acreage worked was rework.

Future control plans for the Forest provide for an examination or post-check of one-fifth of the control areas each year, including areas on maintenance. Rework as indicated by post-check will be performed as needed and new areas justifying protection will be added to the plan as surveys are completed and will become part of the five-year rotation. This five-year plan will iron out the hills and valleys of scheduled work and permit an even control program. It will provide protection when needed for new areas and maintenance of protection on areas already initially worked.

For 1950 the local control work plan calls for the protection of 491 acres of pine by working 1,166 acres of control area at an estimated cost of 555 man-days.

Detailed figures for Surveys, Local Control, Checking, Status of Control and Costs are given in the tables immediately following.

A still more detailed account of the work on each forest may be had by reading the separate reports on each forest.

For May and June, 1951, plans call for the working of 1,721 acres in 4 Districts at an estimated cost of 685 man-days. For F.Y. 1952 the working of 1,909 acres, all rework, on 5 Ranger Districts at a cost of 740 man-days is recommended.

Text Table 6. Local Control on National Forest Lands, Calendar Year 1950,
North Central Region

National Forest	Operating Agency	No. Acres	Acres White Pine Protected		Acres Control Area Worked	Rides Bushes Destroyed	8-Hour Man-Days Used	
			Natural	Planted				Total
			Initial Working					
Huron, Michigan	Bureau-State Forest Service	1	15	-	15	85	-	
	Forest Service	5	50	620	670	1,405	1,947	
	Sub-total	6	65	620	685	1,490	1,947	
Manistee, Michigan	Bureau-State Forest Service	10	-	397	397	1,100	17	
	Forest Service	4	40	244	284	685	2,357	
	Sub-total	14	40	641	681	1,785	2,374	
Hawatha, Michigan	Forest Service	1	220	-	220	480	22,318	
	Bureau-State Forest Service	1	75	-	75	240	-	
	Forest Service	4	165	-	165	570	28,629	
Ottawa, Michigan	Sub-total	5	240	-	240	890	28,629	
	Forest Service	1	180	-	180	197	27,840	
	Forest Service	1	41	-	41	67	7,027	
Superior, Minnesota	Forest Service	5	344	-	344	675	125,771	
	Bureau-State Forest Service	12	90	397	487	1,425	17	
	Forest Service	21	1,040	864	1,904	3,879	215,998	
Chippewa, Minnesota	Sub-total	33	1,530	1,261	2,791	5,304	216,015	
	Forest Service	12	90	397	487	1,425	17	
	Forest Service	21	1,040	864	1,904	3,879	215,998	
Chequamegon, Wisconsin	Sub-total	33	1,530	1,261	2,791	5,304	216,015	
	Forest Service	12	90	397	487	1,425	17	
	Forest Service	21	1,040	864	1,904	3,879	215,998	
All Forests	Sub-total	33	1,530	1,261	2,791	5,304	216,015	
	Forest Service	12	90	397	487	1,425	17	
	Forest Service	21	1,040	864	1,904	3,879	215,998	
Total, Initial Working								

Text Table 6. (Cont'd.) Local Control on National Forest Lands, Calendar Year 1950,
North Central Region

National Forest	Operating Agency	No. Areas	Acres White Pine Protected		Acres Control Area Worked	Ribes Bushes Destroyed	8-Hour Man-Day Used
			Natural	Planted			
			Second Working				
Manistee, Michigan	Bureau-State	2	50	-	240	-	1
	Forest Service	5	270	-	715	3,241	13
	Sub-total	7	320	-	955	3,241	14
Hiawatha, Michigan	Forest Service	1	100	-	225	1,015	24
Superior, Minnesota	Forest Service	5	211	-	276	17,670	100
Chippewa, Minnesota	Forest Service	13	1,116	56	900	32,170	213
Chequamegon, Wisconsin	Forest Service	4	428	80	975	35,186	107
All Forests	Bureau-State	2	50	-	240	-	1
	Forest Service	28	1,425	136	3,091	70,516	603
Total, Second Working			1,475	136	3,331	70,516	604
<u>Third and Other Workings</u>							
Manistee, Michigan	Bureau-State	1	30	-	120	-	1
	Forest Service	1	265	-	450	1,853	20
Ottawa, Michigan	Forest Service	7	1,003	190	1,870	17,034	128
Superior, Minnesota	Forest Service	11	525	504	1,254	41,396	1,151
Chippewa, Minnesota	Forest Service	4	73	60	160	7,630	123
Chequamegon, Wisconsin	Forest Service	1	63	-	112	9,172	22
Nicolet, Wisconsin	Forest Service	4	-	1,035	1,090	30,109	594
All Forests	Bureau-State	1	30	-	120	-	1
	Forest Service	28	1,929	1,789	5,536	107,206	2,164
Total, Third and Other Workings			1,959	1,769	5,656	107,209	2,165

Text Table 6. (Cont'd.) Local Control on National Forest Lands, Calendar Year 1950,
North Central Region

National Forest	Operating Agency	No. Areas	Acres White Pine Protected		Acres Control Area Worked	Roses Bushes Destroyed	Man-Days Used
			Natural	Planted			
Huron, Michigan	Bureau-State Forest Service	1	15	-	85	-	1
		5	50	620	1,405	1,947	30
	Sub-total	6	65	620	1,490	1,947	31
Manistee, Michigan	Bureau-State Forest Service	13	80	397	1,460	20	6
		9	310	244	1,400	5,598	29
	Sub-total	22	390	641	2,860	5,618	35
Hiawatha, Michigan	Forest Service	3	585	-	1,455	20,500	128
	Bureau-State Forest Service	1	75	-	240	-	fr.
		11	1,168	190	2,440	45,663	710
	Sub-total	12	1,243	190	2,680	66,163	710
Superior, Minnesota	Forest Service	17	916	504	1,127	87,057	1,876
	Forest Service	18	539	116	1,127	27,119	600
	Forest Service	10	835	80	1,328	170,009	1,000
	Forest Service	4	-	1,035	1,300	20,109	600
Nicolet, Wisconsin	Bureau-State Forest Service	15	170	397	1,785	20	7
		77	4,394	2,789	12,506	393,720	4,667
Total, All Workings		92	4,564	3,186	16,291	393,740	6,676

Text Table 7. Results of Checking after Ribes Eradication on National Forests,
North Central Region, 1950

National Forest	No. Areas	Checking After Eradication				Classification of				Percent Acreage With 25 F.L.S. or Less per Acre After Working	
		Aores Worked and Checked	Strip Acres	Ribes Bushes	Ribes Found F.L.S.	Ribes per Acre Bushes F.L.S.	Worked Areas on Basis of Ribes F.L.S. per Acre Left After Working				
							0.0 to 15.0 FLS (Aores)	15.1 to 25.0 FLS (Aores)	Over 25 FLS (Aores)		Working
Huron, Mich	6	1,490	30.00	9	12.5	0.3	0.4	1,490	-	100.0	
Manistee, Mich.	22	2,860	63.20	18	40.0	0.3	0.6	2,860	-	100.0	
Marquette, Mich.	3	1,155	45.00	45	44.0	1.0	1.0	1,155	-	100.0	
Ontonagon, Mich.	12	2,680	110.50	175	390.5	1.6	3.5	2,485	195	100.0	
Superior, Minn.	17	1,727	44.18	77	110.0	1.7	2.5	1,727	-	100.0	
Chippewa, Minn.	18	1,127	46.72	94	254.7	2.0	5.5	1,050	54	98.0	
Chequamegon, Wis.	6	1,334	39.70	133	237.3	3.4	6.0	1,334	-	100.0	
Nicolet, Wis.	4	1,690	32.90	184	248.6	5.6	7.6	1,690	-	100.0	
Region Total	88	14,063	412.20	735	1,337.6	1.8	3.2	13,794	249	99.4	

Text Table 8. Status of Control on National Forests, North Central Region,
on December 31, 1950 Net Acres

National Forest	Total Control Problem, Acres				Acres Initially Worked				Acres Not Initially Worked				Acres On Maintenance		Percent	
	Natural Planted		Total Control		Natural Planted		Total Control		White Control		White Control		White Control		White Pine	
	W. P.	W. P.	W. P.	W. P.	W. P.	W. P.	W. P.	W. P.	Pine	Area	Pine	Area	Area	Work	Init.	On
Hoosier.	-	18	18	179	-	18	18	179	-	-	18	179	100.0	100	100.0	100
Wayne,	-	515	515	4,029	-	515	515	4,029	-	-	515	4,029	100.0	100	100.0	100
Huron	517	1,949	2,466	7,824	502	1,949	2,451	7,794	15	30	1,654	6,039	99.4	67	99.4	67
Manistee	3,169	20,892	24,061	74,360	3,169	20,892	24,061	74,360	-	-	22,938	71,195	100.0	95	100.0	95
Marquette	6,658	4,981	11,639	25,710	6,658	4,981	11,639	25,710	-	-	5,647	13,395	100.0	48	100.0	48
Hiawatha	10,779	2,729	13,508	36,262	10,401	2,729	13,130	34,942	378	1,320	6,023	18,951	97.2	44	97.2	44
Ottawa	7,807	3,603	11,410	22,553	7,807	3,603	11,410	22,553	-	-	4,908	9,410	100.0	45	100.0	45
Superior	60,645	3,514	64,159	98,056	22,668	3,514	26,182	33,861	37,977	64,195	10,670	14,609	59.2	16	59.2	16
Chippewa	11,433	1,730	13,163	26,452	9,328	1,730	11,058	22,008	2,105	4,444	8,531	15,856	84.0	64	84.0	64
Chequamegon	16,916	4,164	21,080	35,887	16,130	4,164	20,294	34,462	786	1,425	10,831	19,499	96.3	51	96.3	51
Nicolet	5,993	6,036	12,029	23,401	5,898	6,036	11,934	23,116	95	285	5,105	10,960	99.2	42	99.2	42
Region Total	123,917	50,131	174,048	354,713	82,561	50,131	132,692	283,014	41,556	71,699	76,840	184,122	76.2	44	76.2	44

Text Table 9. Summary of Local Control on National Forests, North Central Region, from Inception to December 31, 1950, All Agencies. Gross Acres

National Forest	Gross Acres W. P. Protected	Gross Acres Worked	Ribes Destroyed	Total Man-Days Used	Average per Acre Worked	
					Ribes	Man-Days
		Initial Working				
Shawnee, Illinois	1	50	-	-	-	-
Hoosier, Indiana	18	179	-	3	0.0	0.02
Wayne, Ohio	514	4,029	56	13	Tr.	Tr.
Huron, Michigan	2,652	8,346	66,634	551	8.0	0.07
Manistee, Michigan	22,971	72,217	176,989	483	2.4	0.02
Marquette, Michigan	11,150	27,487	856,164	7,358	31.1	0.27
Hiawatha, Michigan	10,246	32,131	702,282	5,586	21.9	0.17
Ottawa, Michigan	14,655	30,235	4,286,036	17,075	141.8	0.56
Superior, Minnesota	29,331	46,750	6,353,542	29,972	135.9	0.64
Chippewa, Minnesota	14,826	37,314	3,221,953	14,272	86.3	0.39
Chequamegon, Wisconsin	17,277	40,347	2,789,306	17,216	69.1	0.43
Nicolet, Wisconsin	12,472	29,433	2,282,406	14,303	77.5	0.49
Total Initial Working	136,113	328,518	20,735,368	107,832	63.1	0.33
		Second Working				
Huron, Michigan	737	2,138	27,282	172	12.8	0.08
Manistee, Michigan	4,940	15,689	19,619	220	1.3	0.01
Marquette, Michigan	6,502	14,035	134,630	2,541	9.6	0.18
Hiawatha, Michigan	6,741	16,706	114,815	1,689	6.9	0.10
Ottawa, Michigan	9,413	17,322	808,668	5,983	46.7	0.35
Superior, Minnesota	12,208	16,817	1,171,733	9,608	69.7	0.57
Chippewa, Minnesota	5,433	11,241	327,045	3,070	29.1	0.27
Chequamegon, Wisconsin	17,521	30,588	715,609	8,897	23.4	0.29
Nicolet, Wisconsin	9,931	18,701	351,966	4,338	18.8	0.23
Total Second Working	73,426	143,237	3,671,367	36,518	25.6	0.25

Text Table 9. (Cont'd.) Summary of Local Control on National Forests, North Central Region, from Inception to December 31, 1950. All Agencies. Gross Acres

National Forest	Gross Acres W. P. Protected	Gross Acres Worked	Ribes Destroyed	Total Man-Days Used	Average per Acre Worked	
					Ribes	Man- Days
Third and Other Workings						
Huron, Michigan	8	128	464	5	3.6	0.04
Manistee, Michigan	1,683	5,578	7,503	92	1.3	0.02
Marquette, Michigan	4,765	8,400	30,688	665	3.7	0.08
Hiawatha, Michigan	1,847	4,040	15,322	299	3.8	0.07
Ottawa, Michigan	6,248	10,915	150,045	2,893	13.7	0.27
Superior, Minnesota	6,297	10,782	329,278	4,944	30.5	0.46
Chippewa, Minnesota	1,806	2,377	93,510	571	39.3	0.24
Chequamegon, Wisconsin	3,380	5,355	186,167	2,395	34.8	0.45
Nicolet, Wisconsin	3,079	4,980	106,890	1,794	21.5	0.36
Total Third and Other Workings	29,113	52,555	919,867	13,658	17.5	0.26
All Workings						
Shawnee, Illinois	1	50	-	-	-	-
Hoosier, Indiana	18	179	-	3	0.0	0.02
Wayne, Ohio	514	4,029	56	13	Tr.	Tr.
Huron, Michigan	3,397	10,612	94,380	728	8.9	0.07
Manistee, Michigan	29,594	93,484	204,111	1,795	2.2	0.02
Marquette, Michigan	22,417	49,922	1,021,482	10,564	20.5	0.21
Hiawatha, Michigan	18,834	52,877	832,419	7,574	15.7	0.14
Ottawa, Michigan	30,316	58,472	5,244,749	25,951	89.7	0.44
Superior, Minnesota	47,836	74,349	7,854,553	44,524	105.6	0.60
Chippewa, Minnesota	22,065	50,932	3,642,508	17,913	71.5	0.35
Chequamegon, Wisconsin	38,178	76,290	3,691,082	28,508	48.4	0.37
Nicolet, Wisconsin	25,482	53,114	2,741,262	20,435	51.6	0.38
Total All Workings	238,652	524,310	25,326,602	158,008	48.3	0.30

Text Table 10. Summary of Ribes Eradication, All Workings, by National Forests, and Operating Agencies, North Central Region, from Inception to December 31, 1950. Gross Acres

National Forest	Operating Agency	Gross Acres Worked	Ribes Destroyed	Man-Days Used	Per Acre Ribes	Man-Days
Shawnee, Ill.	Bureau-State	50	0	0	0.0	0.00
Hoosier, Ind.	Bureau-State	179	0	3	0.0	0.00
Wayne, Ohio	Bureau-State	4,032	50	13	Trace	Trace
Huron, Mich.	Bureau-State	2,920	106	20	Trace	0.01
	Forest Service	7,692	94,274	708	12.3	0.09
	Total	10,612	94,380	728	0.9	0.07
Manistee, Mich.	Bureau-State	58,205	36,917	704	0.6	0.01
	Bureau-Interm.	365	1,586	19	4.3	0.05
	Forest Service	34,914	165,608	1,072	4.7	0.03
	Total	93,484	204,111	1,795	2.2	0.02
Marquette, Mich.	Bureau-State	4,045	203,236	1,085	50.2	0.27
	Forest Service	45,877	818,246	9,479	17.8	0.21
	Total	49,922	1,021,482	10,564	20.5	0.21
Hiawatha, Mich.	Bureau-State	7,445	230,751	762	31.0	0.10
	Forest Service	45,432	601,666	6,812	13.2	0.15
	Total	52,877	832,417	7,574	15.7	0.15
Ottawa, Mich.	Bureau-State	3,975	353,341	1,171	88.9	0.29
	Bureau-Interm.	1,173	83,810	414	71.4	0.35
	Forest Service	53,324	4,807,598	24,366	90.2	0.46
	Total	58,472	5,244,749	25,951	45.7	0.33
Superior, Minn.	Bureau-State	6,507	1,479,097	4,518	227.3	0.69
	Forest Service	67,842	6,375,456	40,006	94.0	0.59
	Total	74,349	7,854,553	44,524	105.6	0.60
Chippewa, Minn.	Bureau-State	14,348	936,406	2,607	65.3	0.18
	Forest Service	36,584	2,706,102	15,306	74.0	0.42
	Total	50,932	3,642,508	17,913	71.5	0.35
Chequamegon, Wisc.	Bureau-State	11,277	247,261	1,252	21.9	0.11
	Bureau-Interm.	8,853	161,999	2,180	18.3	0.25
	Forest Service	56,160	3,281,822	25,076	58.4	0.45
	Total	76,290	3,691,082	28,508	43.4	0.37
Nicolet, Wisc.	Bureau-State	8,279	256,292	1,742	31.0	0.21
	Bureau-Interm.	873	7,427	147	8.5	0.17
	Forest Service	43,962	2,477,543	18,546	56.4	0.42
	Total	53,114	2,741,262	20,435	51.5	0.33
Region	Bureau-State	121,259	3,743,463	13,877	30.9	0.11
	Bureau-Interm.	11,264	254,822	2,760	22.6	0.25
	Forest Service	391,787	21,328,317	141,371	54.4	0.36
Region Total		524,310	25,326,602	158,008	40.3	0.30

Text Table 11. Forest Service (74) Funds Spent on Blister Rust Control,
North Central Region, Calendar Year 1950

National Forest	Period Jan. 1 to June 30, 1950			Period July 1 to Dec. 31, 1950			Period Calendar Year 1950		
	Salaries	Non- Salaries	Total	Salaries	Non- Salaries	Total	Salaries	Non- Salaries	Total
Huron, Mich.	\$438.77	\$10.30	\$449.07	-	-	-	\$438.77	\$10.30	\$449.07
Manistee, Mich.	576.03	15.10	591.13	-	-	-	576.03	15.10	591.13
Hiawatha, Mich.	2,126.90	121.79	2,248.69	1,241.80	36.54	1,278.34	3,368.70	158.33	3,527.03
Ottawa, Mich.	6,868.36	693.23	7,561.59	5,250.52	379.00	5,629.52	12,118.88	1,072.23	13,191.11
Superior, Minn.	16,677.67	6,417.63	23,095.30	37,072.80	5,984.10	43,056.90	53,750.47	12,401.73	66,152.20
Chippewa, Minn.	5,913.86	449.44	6,363.30	306.85	-	306.85	6,220.71	449.44	6,670.15
Chequamegon, Wis.	1,908.39	26.88	1,935.27	7,217.70	187.03	7,404.73	9,126.09	213.91	9,340.00
Nicolet, Wis.	5,803.69	293.91	6,097.60	-	-	-	5,803.69	293.91	6,097.60
Region Total	40,313.67	8,028.28	48,341.95	51,099.67	6,526.67	57,626.34	90,103.36	24,544.93	114,648.29

CHART 12

Status of Control at End of Each Year as Shown

FOREST SERVICE LANDS - NORTH CENTRAL REGION

(Net Acres)

400,000

350,000

300,000

250,000

200,000

150,000

100,000

50,000

0

LEGEND:



CONTROL AREA INITIALLY WORKED
NOT ON MAINTENANCE



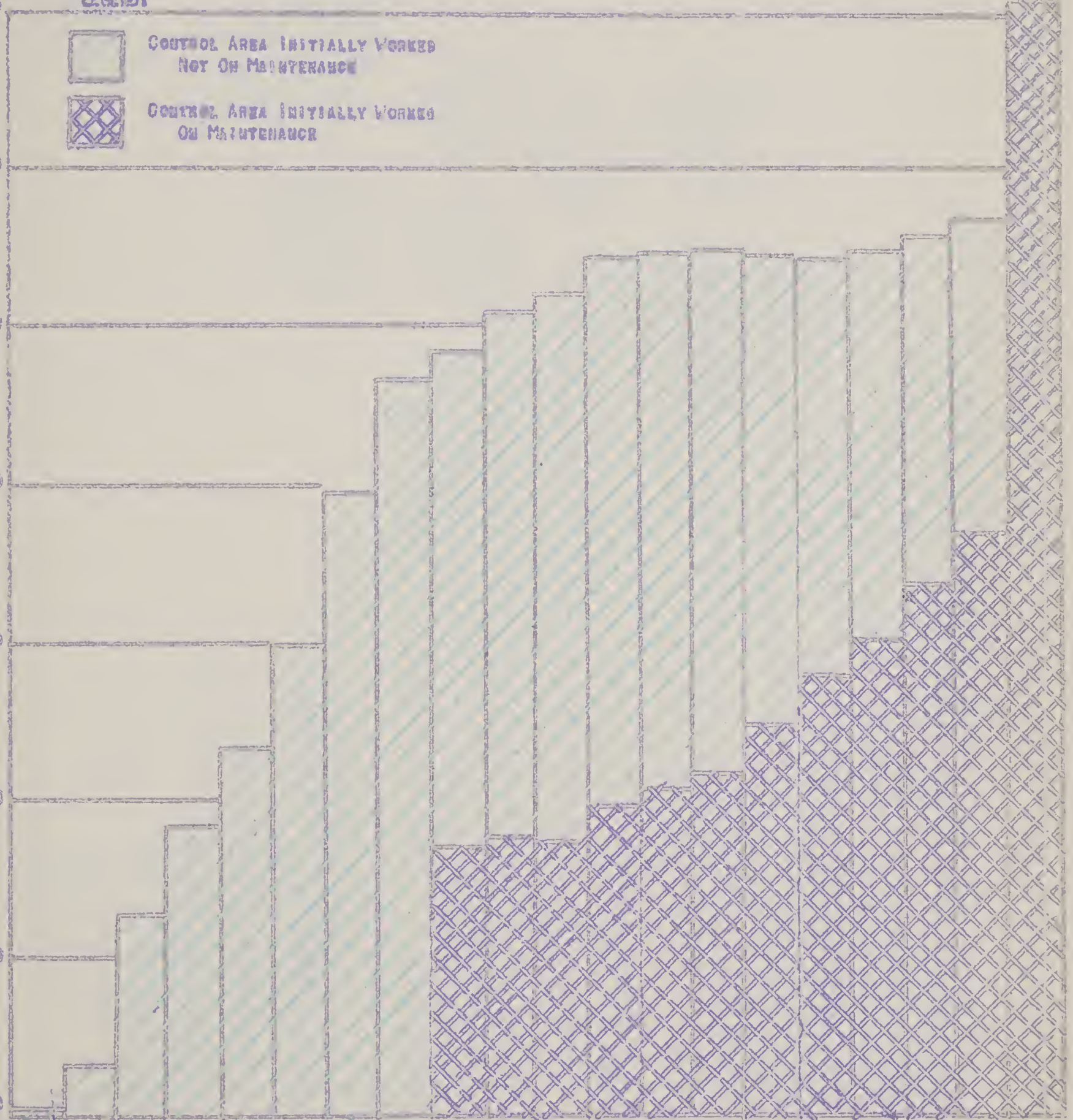
CONTROL AREA INITIALLY WORKED
ON MAINTENANCE

Acres in Control Area

'32 '33 '34 '35 '36 '37 '38 '39 '40 '41 '42 '43 '44 '45 '46 '47 '48 '49 '50 Goal

YEARS

Present Goal is 354,774
Acres of Control Area
by 12/31/50



Status of Control Work on NATIONAL FORESTS

NORTH CENTRAL REGION

1950

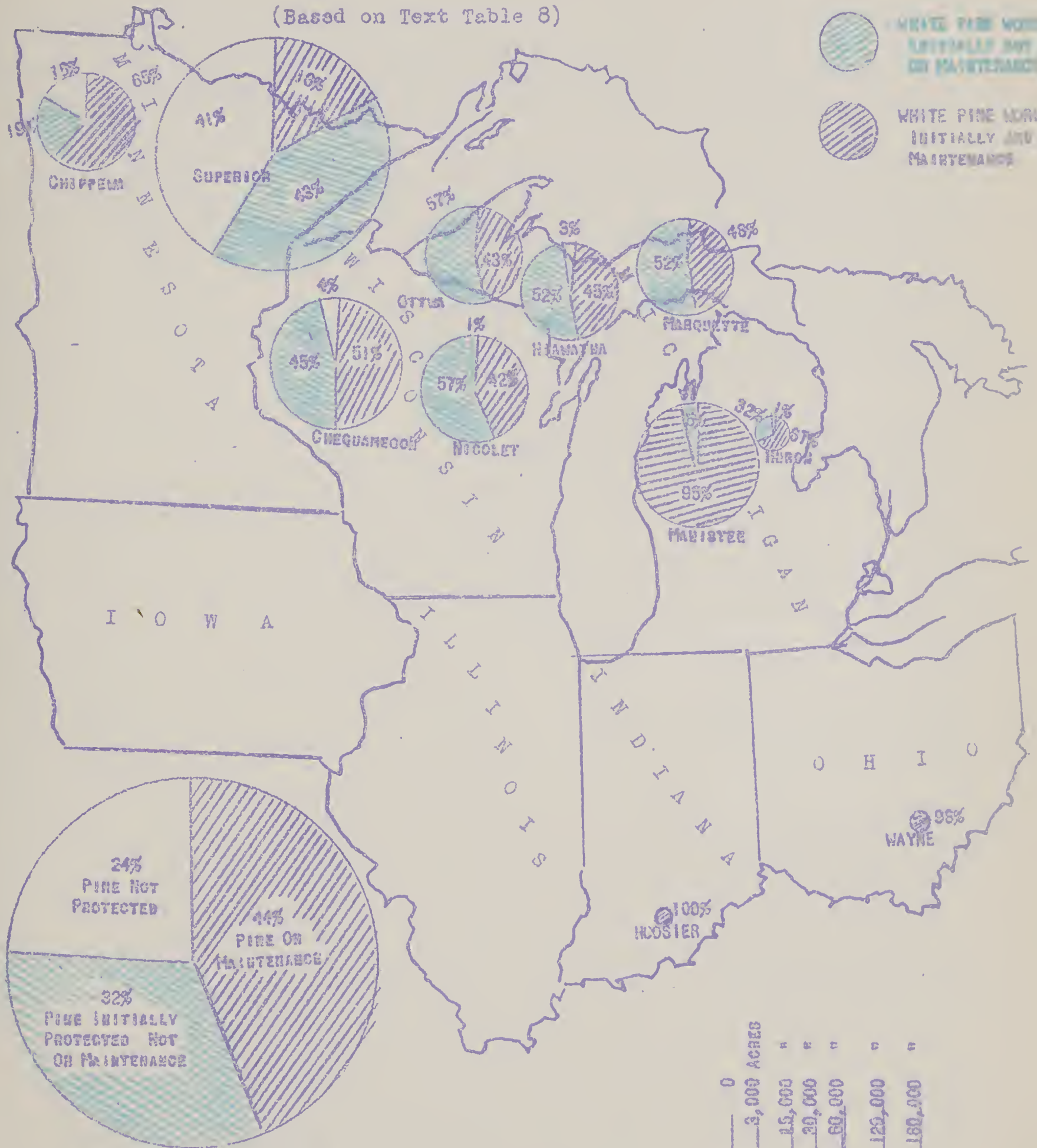
(Based on Text Table 8)

LEGEND:

WHITE PINE NOT PROTECTED

WHITE PINE WORKED INITIALLY BUT NOT ON MAINTENANCE

WHITE PINE WORKED INITIALLY AND ON MAINTENANCE



NORTH CENTRAL REGION

Total White Pine Area in NATIONAL FOREST Control Problem

174,048 Acres

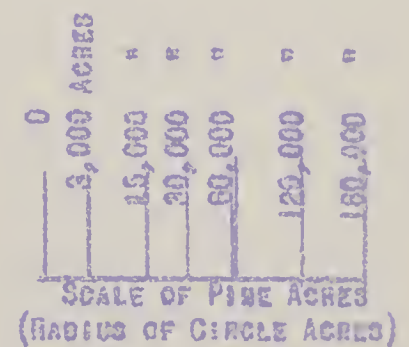
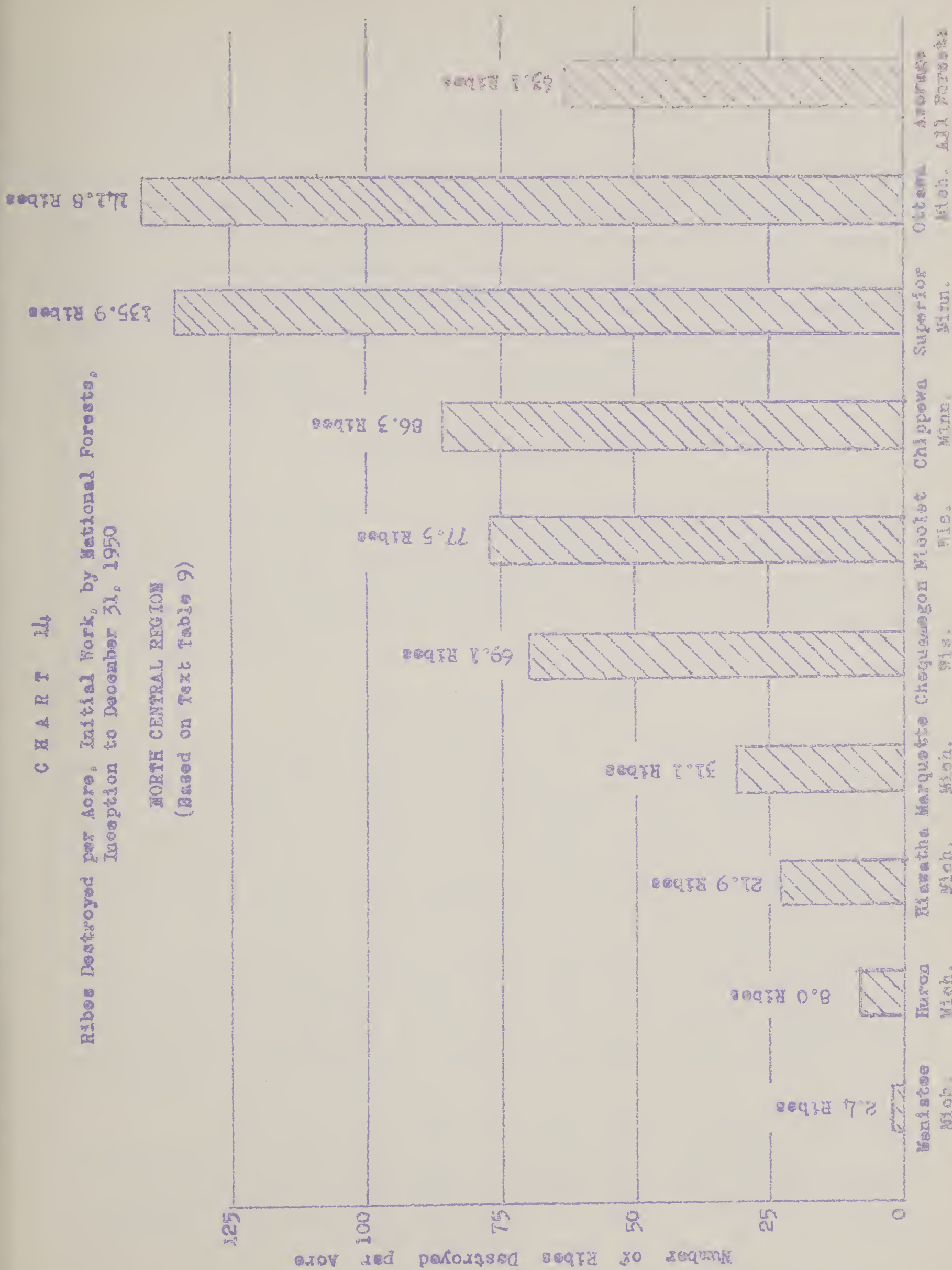




CHART 14

Ribes Destroyed per Acre, Initial Work, by National Forests,
Inception to December 31, 1950

NORTH CENTRAL REGION
(Based on Text Table 9)



BLISTER RUST CONTROL ON INDIAN RESERVATIONS, 1950

NORTH CENTRAL REGION FINANCIAL PROJECT BLR 7

Objective

The objective of the blister rust control program on Indian Reservations is to protect against blister rust all valuable white pine stands administered by the Indian Service. This involves initial and subsequent eradication of ribes from within infecting distances of white pine stands in order to bring such stands through to commercial maturity free from appreciable amounts of blister rust damage. The immediate objective is to put as many areas as possible through ribes eradication on a maintenance basis. The term "Maintenance" as used in blister rust control refers to a condition where no further ribes eradication work is believed necessary to bring the present crop of pine through to merchantable size without serious losses from blister rust.

Memorandum of Understanding

Control work on Indian Reservation lands is performed through a Memorandum of Understanding between the U. S. Indian Service and the Bureau of Entomology and Plant Quarantine. The Indian Service is responsible for selecting the pine areas to be protected and the employment of labor and supervision. The Bureau of Entomology and Plant Quarantine is responsible for the preparing of work plans and maps, training of labor and supervision, checking the adequacy of control work, keeping records, and making reports of work accomplished.

General Status of Control

There are eleven Indian Reservations in the Region that are concerned with white pine blister rust and its control. They have a total of 77,605 acres of valuable white pine in the control problem. Much of this is in the younger age classes. To assure its reaching commercial maturity, protection from blister rust must be maintained through ribes eradication. Control work performed to date has kept the disease in check so that no serious commercial damage is being suffered in protected stands. Most of the initial work has been done and areas that are now being worked for the first time are new ones that have become established either through planting or natural regeneration or old ones which were once low on the priority list but have since become first class areas through increased stocking. Rework has been kept pretty well up to schedule so that ribes which came in since the initial working have been destroyed before they became old enough to produce seed. As of December 31, 1950, 96.1 percent of all pine acreage in the present control problem has been given initial protection and 67.8 per cent is on maintenance and will require no further crew work.

There has been an increase of 1,707 acres of white pine over the 1949 figure. This increase is due to natural white pine regeneration which has been taking place on several of the Reservations in the last few years. Surveys made in 1950 included this new acreage which had not been mapped previously. Text Table III shows the general status of control on each of the Reservations.

Rust Conditions

In general, ribes are more abundant on Indian Reservation lands than the average. Also most of the Reservations are located in the northern part of the Region where climate conditions favor the spread of the rust. Infection on pine is common in unprotected stands in the North. Yet there is comparatively little damage in the protected stands on the Reservations. The fact that such a high proportion of Indian white pine forests has been initially worked, and the absence of serious damage to these white pines from blister rust, speaks very well for the effective manner in which the Indian Service has performed blister rust control.

There was nothing unusual about the amount of rust found on ribes in 1950. The season seems to have been a normal one with long dry spells in some parts of the Region and cool moist periods in others, but no general climatic condition which could be said to either favor or hinder the spread of the rust. Nor were there any startling discoveries of rust on pine in any of the Reservations, just the usual insidious intensification in unprotected stands. Examinations made during the year confirmed the earlier observation that the years 1944 and 1945 had been especially favorable for pine infection, especially in Minnesota.

Control Work in 1950

Local control work was performed on 7 of the 11 Reservations, or on all but the Sac-Fox, Vermilion, Leech Lake and White Earth Reservations. As noted in Text Table 12, 12,064 acres of control area were cleared of 252,202 ribes to protect 7,169 acres of pine at a cost of 4,860 man-days. Only one tenth of the man-days were used on initial work, and nine tenths on rework. The proportion of reeradication work being done compared to initial work is a good index of progress being made in catching up on the control problem. The more reeradication the better the progress. It indicates that after worthwhile new areas are taken care of initially sufficient funds are left to rework other valuable areas before ribes become reestablished in them. There will always be some initial work each year because of new white pine areas coming in through natural reproduction or planting. The amount of reeradication to be done will diminish as more areas are put on a maintenance basis.

That good progress in local control was made in 1950 is evidenced by the fact that in spite of adding 1,707 acres of white pine to the control problem, the percentage of pine initially protected was raised from 95.6 in 1949 to 96.1 in 1950 and acreage placed on maintenance from 61.5 to 67.8 per cent.

All control work done in 1950 was performed on the basis of plans agreed upon by the Indian Service and the Blister Rust Control Organization. Indian labor was used entirely. Direct supervision was also provided by the Indian Service through the employment of technically trained men assigned to supervise the work on one or more Reservations. The Bureau of Entomology and Plant Quarantine provided overall technical direction, checked on adequacy of control work and assisted in training crews, mapping, keeping records and preparing the necessary reports.

All but 3 of the 32 areas worked in 1950 were given a formal check. It was found that 99.6 percent of the acreage worked and checked contained less than 25 feet of ribes live stem per acre remaining after working; a very commendable showing of quality work performed.

Generally speaking, the 1950 eradication season on the Indian Reservations was a very successful one and followed quite closely the work plans that were prepared and approved in advance.

Expenditures in 1950

Expenditures for ribes eradication by Indian Reservations and sources of funds for 1950 are shown in Text Table 16. Regular Indian Service (3107 and 77) funds were spent on seven reservations in the total amount of \$41,102.43. In addition \$7,304.03 of Menominee Indian Tribal funds were used in local control, making a total of \$48,406.46 furnished by the Indian Service. The Bureau of Entomology and Plant Quarantine provided additional funds for mapping, surveying, checking, technical supervision and keeping of records, as its part of its responsibilities towards the control program on Indian Service lands.

Work Plans for 1951

On the basis of surveys made in 1950 the following work schedule is suggested for 1951. As has been the custom in the past it is hoped that representatives of the Indian Service can accompany Bureau men into the field to check and pass on the desirability of working the proposed areas well in advance. Because of especially heavy ribes concentrations on the Grand Portage and Nett Lake Reservations, the cost of eradication work on them will be unusually high. Therefore it is doubly important that the Indian Service determine for itself which areas it considers worth the protection costs involved.

Areas in Need of Work in 1951

Reservation	No. Areas	Acres Pine to be Protected	Acres to Work	Estimated Man-days needed
Grand Portage	2	445	584	642
Nett Lake	1 Mop-up only	-	3	4
Bad River	5	780	1,182	435
Lac Court Oreilles	10	2,465	4,079	1,640
Menominee	10	2,160	3,955	1,700
Total	28	5,850	9,783	4,380

In addition to the above it is recommended that rework be done on the Sac Fox Reservation in Iowa. This Reservation contains 45 acres of planted pine with 500 acres of control area. It was last worked in 1944 when 57 man-days were used on rework. It is suggested that 60 man-days of Indian labor be provided for work there in 1951.

It is recommended that the same effective cooperation and coordination of effort between the Indian Service and the Bureau be continued as it has in the past. It has produced good results by bringing the control program on all Reservations up to schedule and preventing serious losses from blister rust. Specifically this cooperation includes the joint preparation of work plans based on field surveys, discussing and evaluating pine areas by representatives of both agencies together on the ground, and joint consultation in the preparation of budgets. It also includes hiring and supervising of labor by the Indian Service and making of final checks on the work by the Bureau.

A brief discussion of the work on each Indian Reservation follows. A more detailed account can be found in the separate report for each Reservation.

Sac-Fox Indian Reservation - Iowa

The Sac-Fox Indian Reservation located approximately in the center of the State of Iowa has 45 acres of planted pine with a control area of 500 acres. All of it has been initially protected and some of it was reworked in 1944 when 14,074 ribes were destroyed. No work has been done since 1944. A brief inspection made in the fall of 1949 showed that ribes are coming back. The white pine is making excellent growth on this Reservation. Annual height growths of from three to four feet are not uncommon.

No blister rust infection has been found on the Reservation. Ribes infection, however has been found in Tama county. It is recommended that 60 man-days of Indian labor be provided to rework the entire 500 acres of control areas in 1951.

Grand Portage Indian Reservation - Minnesota

The Grand Portage Indian Reservation has 1,097 acres of natural white pine included in its 2,503 acres of control area. All but 123 acres of it has been given initial protection and the necessary rework when due. None of it however, is on maintenance. Blister rust infection on pine occurs in limited amounts throughout the protected area. Contrasted to the severe pine infection that is found in neighboring territory, especially on the Canadian side where no control work has been done, the small amount of infection found on the Reservation is good proof of the effectiveness of blister rust control. The abundance of ribes, the topography and the Lake Superior climatic conditions all are extremely favorable for the rapid spread and development of the rust in this part of Minnesota. Therefore, special care must be exercised to keep the ribes population in the control zone down. Rework was performed on three pine areas on Grand Portage in 1950. Protection was thus maintained on 93 acres of pine by destroying 54,773 ribes on 228 acres of control area at an expenditure of 385 man-days. In addition to pulling bushes by hand quite a few American black currant bushes were sprayed with a 2,4-D solution with good results. Some of the ground covered by the eradication crews this year was particularly difficult to work because of rough terrain with steep palisade-type cliffs. In spite of this difficulty the men did good work and the areas checked out sufficiently well so that no mop-up work is required.

Two areas are scheduled for working in 1951, one initial and one rework. It will involve covering 584 acres of control area at an estimated cost of 642 man-days. These are above average eradication costs and it is recommended that the Indian Service and Bureau representatives get together on the ground and evaluate these areas before working them.

Leech Lake Indian Reservation - Minnesota

The Leech Lake Indian Reservation is on a large peninsula extending into Leech Lake just across the bay and north of the Village of Walker. This part of the reservation is known as the "Onigum Unit" and contains the entire white pine blister rust control area of 3,387 acres which includes 2,432 acres of white pine. Nearly half of the white pine is owned by the U. S. Forest Service. A similar amount is within the jurisdiction of the Consolidated Chippewa Indian Agency. Initial control work was performed in 1934 and rework in 1946 and 1947. Nearly all of the control area, 2,076 acres of white pine and 2,755 acres of control area, is on maintenance. No additional work is contemplated until 1954. This is one of the best stocked stands of any on the reservations.

Nett Lake Indian Reservation - Minnesota

This reservation has 5,212 acres of white pine in its control area of 7,079 acres. All but 23 acres of pine and 43 acres of control have been given initial protection. This small piece is surrounded by a muskeg swamp in the northwest part of the reservation and is quite inaccessible. Over 90 percent of the pine on the reservation is on maintenance. Logging of large jack pine in 1947 has stimulated white pine reproduction and ribes regeneration. Pine infection can be found scattered lightly throughout the protected pine on the reservation and is quite heavy in understocked unprotected stands.

Local control in 1950 consisted of reworking 110 acres of control area from which 17,727 ribes were removed at an expenditure of 231 man-days. Protection was thus maintained on 2 areas having a total of 39 acres of pine.

Checking after eradication revealed that one of the two areas had been cleaned up thoroughly. The other one did not pass the regional standard of 25 F.L.S. per acre and should be mopped up in the spring of 1951.

Only one small mop-up job is scheduled for 1951. This is a three acre piece of swamp near Nett Lake Village that was worked in 1950 but did not pass inspection. It is recommended that the wild black currants found in the swamp be sprayed with a solution of 2,4-D. Four man-days of work are estimated.

Vermilion Indian Reservation - Minnesota

The control problem on this reservation consists of 78 acres of natural pine and 186 acres of control area. Following the fifth working in 1949 the entire acreage was placed on maintenance. Only a very small amount of rust can be found on the pine. This again brings out the effectiveness of control as the area originally had a very heavy ribes population and is located where climatic conditions are very favorable for the spread of the rust.

White Earth Indian Reservation - Minnesota

The blister rust control problem on this reservation consists of 1,056 acres of control area including 502 acres of white pine.

Initial protection and rework has kept blister rust infection to a minimum with only a trace of it to be found in the protected stands. The last ribes eradication was done in 1947 which brought the control work up to date. About half the pine acreage and control area is now on maintenance. No ribes eradication work is believed necessary in 1951.

Red Lake Indian Reservation - Minnesota

The Red Lake Indian Reservation with 12,604 acres of white pine in its control problem contains over half the total white pine of all the reservations in Minnesota. The main body of white pine occurs on Pomenah Point, a peninsula projecting between Upper and Lower Red Lake. A considerable number of smaller pine areas are found immediately south of Lower Red Lake. Not included in the present control problem are two other locations of white pine, one the Pine Island Indian lands in Koochiching County and the other on the Northwest Angle. Both are off the Reservation but are administered by the Red Lake Agency. It is doubtful if either one will be included in the control problem. The Pine Island lands have about 1,000 acres of mature red and white pine but after it is logged it appears quite likely it will reproduce to balsam due to its swampy location. The Northwest Angle has sapling and pole size pine growing on a sand ridge in two interior sections. This area is quite inaccessible and can be reached only by airplane or boat from the Minnesota mainland.

The white pine on the Reservation proper is of all ages, ranging from large mature trees, now in the process of being logged, to seedlings that are coming in under the older trees. A high wind in July 1949 blew down about 4 million board feet of mature pine on Pomenah Point. This disturbance and the ensuing logging operations will very likely encourage new pine reproduction and ribes regeneration.

All of the 12,604 acres of white pine on the Reservation has been initially protected and rework has been done on a lot of it. Nearly 83 percent of the pine is on maintenance.

Rust conditions on the Red Lake Reservation are not severe. Ribes abundance ranges all the way from very heavy in the swamps, heavy in the hardwoods, to light on the sandier soils. Logging in the area has stimulated ribes regeneration making rework necessary. Blister rust infection on pine averages from one to two percent which is still well below the safe level. Considering the ribes concentrations and the climatic conditions favorable for the spread of the rust this light infection indicates that the control measures applied and maintained have been very effective.

Local control in 1950 got under way on May 24 and continued through June 28. Employment varied from 4 to 13 men. All eradication performed this year was rework. A total of 311 acres of white pine were protected; 707 acres worked; 15,028 ribes destroyed and 256 man-days used. Checking revealed that good work had been done. With the working of these four areas the schedule of control work on the Red Lake was completed. It is now recommended that a program of post check be undertaken starting in 1952 and surveying about 5,000 acres a year. From the findings of these post check surveys plans for doing local control rework can be made. The status of blister rust control on the Red Lake Reservation is very satisfactory. About 83 per cent of the best white pine acreage is now on maintenance and the remaining acreage is currently up to the schedule of protection.

Bad River Indian Reservation - Wisconsin

There are 8,293 acres of white pine and 14,552 acres of control area within the control problem of the Bad River Reservation. All but 96 acres have been given initial protection. As of December 31, 1950, 95.2% of this pine has been placed on maintenance.

Blister rust infection on ribes and white pine has been found throughout the Reservation, but it is very light, having less than one percent infection in protected stands. In unprotected areas of scattered pine numerous cankers are found on trees in ravines and along the edges of openings.

In 1950 Local control gave protection to 1,011 acres of white pine by the removal of 61,705 ribes from 1,508 acres of control area at a cost of 185 man-days. Most of this was rework. Indian men ranging in age from 18 to 67 did the work. Checking revealed that they did very good work, leaving an average of only 5.8 feet of live stem per acre after working.

Proposed work for 1951 lists 780 acres of white pine to be protected by ribes eradication on 1,182 acres of control area. It is estimated that 437 man-days will be needed to do the work at a total estimated cost of \$5,000.00.

Lac Court Oreilles Indian Reservation - Wisconsin

The white pine acreage on the Lac Court Oreilles has been increasing for the past several years. There are now 13,808 acres of good white pine in the control problem of the reservation. Further increases can be expected as it is estimated there are about 35,000 acres of white pine forest type on this reservation. On most of this acreage scattered white pines of seed bearing age are found. Each year there is a noticeable increase in natural reproduction.

Blister rust infection is quite generally distributed over the reservation doing considerable damage in unprotected areas and very little in protected stands.

Ribes eradication work performed in 1950 consisted of initial and rework. Local Indians were employed to do the eradication work from May 14 to September 15. There were 2,690 acres of white pine protected by the removal of 42,256 ribes from 4,108 acres of control area at an expenditure of 1,145 man-days.

Checking after eradication proved that very satisfactory work had been done. Checks revealed that after eradication an average of only 1.5 bushes and 4.2 feet of live stem remained.

The status of control as shown in Text Table 14, shows that 96.5 percent of the pine acreage has been given initial protection and 55.4 percent is now on maintenance. The character of ribes growth on the reservation is such that it takes two or more workings at about 5 year intervals to reduce the ribes population to a point where recurrence of the plants will not endanger the pine.

The proposed program of local control for the calendar year 1951 on the Lac Court Oreilles Indian Reservation lists 283 acres of white pine to be protected initially and 2,182 acres to be protected by rework. This will require working a total control area of 4,079 acres estimated to require 1,610 man-days.

Lac du Flambeau Indian Reservation - Wisconsin

The Lac du Flambeau Reservation like the Lac Court Oreilles has some very good white pine sites that are steadily increasing in pine acreage as new reproduction comes in.

At present there are 12,453 acres of white pine worth protecting on the reservation. White pine reproduction is continuing to come in. During the eleven years from 1939 through 1950, there has been an increase of 10,857 acres of white pine. To date 96.0 percent of the pine has been given initial protection and 85.6 percent is on maintenance and will require no further crew work.

Local control in 1950 was started on May 22 by a crew of five Indians who worked through June 23. They protected 1,372 acres of white pine by removing 6,204 ribes from 2,498 acres of control area at a cost of 118 man-days, a very creditable accomplishment. By far the greatest number of ribes destroyed and man-days used was on initial work which protected a lot of good white pine reproduction recently brought into the control problem. The quality of work done was very good. Checking revealed that the entire 2,498 acres worked had been satisfactorily cleared of ribes so that none of them contained over 15 F.L.S. per acre after working.

No local control work is planned for the 1951 calendar year on the Flambeau. The next program planned is for the fiscal year 1952 when an estimated 3,000 acres of control area will need eradication work. An estimated 400 man-days will be needed to do the work at a cost of about \$4,000.00.

Menominee Indian Reservation - Wisconsin

The Menominee contains the largest amount of white pine of all the reservations in this Region. The pine is of all age classes ranging from large saw timber which is producing high quality lumber annually to reproduction which continues to come in on favorable white pine sites. Most of this increase is taking place on the lighter soil types east of the Wolf River where reproduction is becoming established under oak, red pine and jack pine. The quality of immature white pine areas on the Reservation appears to be much better than average. Stocking and growth is usually excellent. Except for blister rust, there has been very little damage from insect pests or other plant diseases. Browse damage is insignificant because the deer and rabbit population is kept down by year round hunting on the Reservation. Through surveys, 513 acres of new white pine reproduction were mapped and included for initial protection during the year.

All ribes species indigenous to eastern Wisconsin are present on the Reservation. Distribution varies with soil and cover types, light to absent on sandy soils, medium to abundant in swamps and on the heavier soils. No white pine areas are entirely ribes free.

Blister rust infection on pine is found in every area on the Reservation. Damage is not serious however, in areas where adequate control measures have been maintained. But considerable rust damage does occur in unprotected areas, such as in scattered reproduction in hardwood types, in old fields and edges of lowland surrounded by hardwoods and in well stocked areas too small to protect.

Ribes eradication work in 1950 was started on May 12 and continued until September 9. Crew personnel consisted entirely of Indian women. Four crews averaging 6 women per crew were used throughout the season. Both initial and rework were done. A total of 1,650 acres of white pine was given protection by working 2,905 acres of control area from which 54,509 ribes were removed at an expenditure of 1,940 man days.

Systematic checking and general observation indicate that the quality of work was fair. Portions of several jobs, particularly lowland areas, failed to check below 25 feet of ribes live stem per acre and were reworked. While most of the ribes were uprooted some chemical spraying was also done. Dense concentrations of Ribes americanum within the protective zones of areas being worked were treated with a foliage spray of 2,4-D. Preliminary examinations indicate good kill on currants where the coverage was adequate. The spraying of dense clumps of susceptible species of ribes greatly speeds up the work and where applicable affords a considerable saving of man-days.

Of the 21,000 acres of white pine in the control problem on the Navajo reservation 91.7 percent have been initially worked and 12.0 percent are on maintenance.

Control work which remains includes the protection of 12,273 acres not on maintenance, and initial protection of areas currently restocking to white pine.

Work plans for 1951 call for the working of 3,935 acres of control areas which will require an estimated 1,780 man-days. A total of 24 men will be used, and it is felt that they can complete all scheduled work for 1951 by June 30.

Detailed figures for Surveys, Local Control, Checking, Status of Control and Costs are given in the tables immediately following.

A still more detailed account of the work on each reservation may be had by referring to the separate reports for each reservation.

Text Table 12. Local Control on Indian Reservations, All Performed
by Indian Service,
North Central Region, 1950

Indian Reservation	No. Areas	Aores White Pine Protected All Natural	Aores Control Area Worked	Ribes Bushes Destroyed	8-Hour Man- Days Used
<u>Initial Working</u>					
Red River, Wis.	1	30	104	-	-
Lac Court Oreilles, Wis.	2	416	570	1,478	35
Lac du Flambeau, Wis.	6	1,078	2,016	4,641	88
Menominee, Wis.	2	420	905	11,402	304
Total, Initial Working	11	1,944	3,595	17,521	427
<u>Second Working</u>					
Grand Portage, Minn.	2	68	184	46,904	323
Red Lake, Minn.	3	250	531	14,908	238
Red River, Wis.	1	34	114	15,729	125
Lac Court Oreilles, Wis.	2	2,062	3,000	40,361	1,040
Lac du Flambeau, Wis.	1	294	482	1,563	30
Menominee, Wis.	3	1,000	1,580	29,131	1,159
Total, Second Working	12	3,708	5,891	148,596	2,915
<u>Third and Other Workings</u>					
Grand Portage, Minn.	1	25	44	7,869	62
Red Lake, Minn.	2	39	110	17,727	231
Red Lake, Minn.	1	61	176	120	18
Red River, Wis.	1	950	1,290	45,976	660
Lac Court Oreilles, Wis.	1	212	538	417	70
Menominee, Wis.	3	230	420	13,976	477
Total, Third and Other Workings	9	1,517	2,578	86,085	1,518
<u>All Workings</u>					
Grand Portage, Minn.	3	93	228	54,773	385
Red Lake, Minn.	2	39	110	17,727	231
Red Lake, Minn.	4	311	707	15,028	256
Red River, Wis.	3	1,014	1,508	61,705	785
Lac Court Oreilles, Wis.	5	2,690	4,108	42,256	1,145
Lac du Flambeau, Wis.	7	1,372	2,498	6,204	118
Menominee, Wis.	8	1,650	2,905	54,509	1,940
Region Total, All Workings	32	7,169	12,061	252,202	4,860

Text Table 13. Results of Cheeking After Ribes Eradication on Indian Reservations,
North Central Region, 1950

Indian Reservation	No. Acres	Cheeking After Eradication		Classification of Worked Areas on Basis of Ribes F.L.S. per Acre After Working				Percent Acreage With 25 FLS or Less Per Acre After Working		
		Strip Acres	Ribes Bushes	Found F.L.S.	Ribes per Acre Bushes F.L.S.	0.0 - 15.0 FLS (Acres)	15.1 - 25.0 Over 25.0 FLS (Acres)			
Grand Portage, Minnesota	3	228	11.28	94	126.4	8.3	11.2	184	44	80.7
Nott Lake, Minnesota	2	110	7.02	12	15.8	1.7	2.3	110	-	100.0
Red Lake, Minnesota	4	707	7.90	24	27.0	3.0	3.4	707	-	100.0
Bad River, Wisconsin	2	1,404	15.70	50	91.5	3.2	5.8	1,404	-	100.0
Lac Court Oreilles, Wisconsin	3	3,915	28.60	43	120.5	1.5	4.2	3,915	-	100.0
Lac du Flambeau, Wisconsin	7	2,498	40.00	0	0.0	0.0	0.0	2,498	-	100.0
Menominee, Wisconsin	8	2,805	70.40	128	273.6	1.8	3.9	2,805	-	100.0
Region Total	29	11,667	180.90	351	654.8	1.9	3.6	11,623	44	99.6

Text Table 11. Status of Control on Indian Reservation, North Central Region, on December 31, 1950

Net Acres

Indian Reservation	Total Control Problem, Acres				Acres Initially Worked				Acres Not Initially Worked				Acres on Maintenance				Percent White Pine	
	White Pine		Control		White Pine		Control		White Pine		Control		White Pine		Control		Initially	on
	Natural Planted		Total Area		Natural Planted		Total Area		Natural Planted		Total Area		Natural Planted		Total Area			
	White Pine	Natural	Control	Total	White Pine	Natural	Control	Total	White Pine	Natural	Control	Total	White Pine	Natural	Control	Total	ally	Worked
Iowa																		
Sac-Fox	45	45	500	500	45	45	500	500	-	-	-	-	-	-	-	-	100.0	0.0
Minnesota																		
Grand	1,097	1,097	1,503	2,599	974	974	1,294	2,268	123	123	209	209	-	-	-	-	88.8	0.0
Portage	78	78	186	264	78	78	186	264	-	-	-	-	78	78	186	264	100.0	100.0
Vermillion	5,070	5,212	7,079	12,149	5,070	5,212	7,079	12,149	-	-	-	-	4,770	4,770	6,238	11,008	100.0	91.5
Nott Lake	2,432	2,432	3,387	5,814	2,432	2,432	3,387	5,814	-	-	-	-	2,076	2,076	2,755	4,831	100.0	85.4
Leech Lake	502	502	1,056	1,558	502	502	1,056	1,558	-	-	-	-	231	231	545	776	100.0	46.0
White Earth	12,417	12,604	19,143	31,564	12,417	12,604	19,143	31,564	-	-	-	-	10,460	10,460	14,789	25,249	100.0	83.0
Red Lake	329	329	32,354	32,683	21,473	21,473	32,354	53,827	123	123	209	209	17,615	17,615	24,513	26,122	99.4	30.3
Wisconsin																		
Bad River	8,293	8,293	14,552	22,845	8,197	8,197	14,375	22,572	96	96	177	177	7,892	7,892	13,048	21,117	98.8	95.2
Lac Court Oreilles	13,434	13,808	25,900	39,338	12,947	12,947	25,772	38,719	487	487	1,228	1,228	7,653	7,653	13,785	21,666	96.5	55.4
Lac du Flambeau	12,407	12,453	23,367	35,774	11,907	11,907	22,367	34,274	500	500	1,000	1,000	10,686	10,686	20,566	31,252	96.0	85.8
Menominee	20,829	21,081	35,462	56,291	19,046	19,046	32,257	51,302	1,783	1,783	3,205	3,205	8,808	8,808	14,260	23,068	91.5	41.8
Total, Wis.	54,963	55,635	99,381	154,344	52,097	52,097	92,772	144,869	2,866	2,866	5,610	5,610	35,039	35,039	61,659	86,985	94.8	55.0
Total, Region	76,559	77,605	131,235	208,313	73,570	73,570	125,146	200,196	2,989	2,989	5,819	5,819	52,654	52,654	86,172	113,117	96.1	67.5

Test Table 15. Summary of Local Control Performed on Indian Reservations,
North Central Region, From Inception to December 31, 1950.
Work Done by Indian Service Except as Noted. Gross Acres

Indian Reservation	Acre White Pine Protected	Acre Worked	Ribes Destroyed	8-Hour Man- Days Used	Average Per Acre Worked Ribes	Per Day
Initial Working						
Mac-Fox, Iowa	45	500	13,462	169	26.9	0.34
Grand Portage, Minn.	1,012	1,620	2,367,154	4,525	1,461.2	2.79
Ormilion, Minn.	72	286	137,530	424	480.9	1.48
Ott Lake, Minn.	4,497	7,126	527,722	1,841	74.1	0.26
Leech Lake, Minn. (a)	2,562	3,323	378,885	1,007	114.0	0.30
White Earth, Minn. (b)	466	1,354	398,705	1,178	294.5	0.87
Red Lake, Minn.	13,444	20,838	6,750,239	11,321	323.9	0.54
Mad River, Wis.	7,544	14,777	8,216,882	13,888	556.1	1.28
Mac Court Oreilles, Wis.	10,332	20,134	1,544,151	11,378	76.7	0.57
Mac du Flambeau, Wis.	11,419	22,464	771,317	4,389	34.3	0.20
Menominee, Wis.	24,064	40,242	10,328,417	35,161	256.7	0.87
Total, Initial Working	75,457	132,664	31,434,464	90,281	236.9	0.60
Includes work done on Bureau-State funds as follows:						
(a) Leech Lake, Minn.	-	1,675	52,533	275	31.4	0.16
(b) White Earth, Minn.	-	982	252,747	633	257.4	0.71
Total Bureau-State Funds	-	2,657	305,280	968	114.9	0.36
Second Working						
Mac-Fox, Iowa	10	206	3,592	57	17.4	0.28
Grand Portage, Minn.	537	835	336,405	1,387	402.9	1.66
Ormilion, Minn.	72	206	29,912	210	145.2	1.02
Ott Lake, Minn.	3,103	3,611	321,890	2,604	89.1	0.72
Leech Lake, Minn. (c)	2,288	3,012	197,460	831	65.6	0.28
White Earth, Minn.	481	918	204,927	673	223.2	0.73
Red Lake, Minn.	12,388	18,901	1,743,630	7,665	92.3	0.41
Mad River, Wis.	4,413	8,209	1,387,246	5,860	169.0	0.71
Mac Court Oreilles, Wis.	5,859	10,517	464,846	3,835	44.2	0.36
Mac du Flambeau, Wis.	2,512	6,866	48,033	401	7.0	0.06
Menominee, Wis.	11,045	19,177	1,731,826	15,095	90.3	0.77
Total, Second Working	42,708	72,458	6,469,767	38,618	89.3	0.53
Includes work done on Bureau-State funds as follows:						
(c) Leech Lake, Minn.	-	632	44,189	211	69.9	0.33

Post Table 15. (Cont'd) Summary of Local Control Performed on Indian Reservations, North Central Region, From Inception to December 31, 1950. Work Done by Indian Service Except as Noted. Gross Acres

Indian Reservation	Acres White Pine Protected	Acres Worked	Ribbs Destroyed	8-Hour Man-Days Used	Average Per Acre Worked	
					Ribbs	Man-Days
<u>Third and Other Workings</u>						
Grand Portage, Minn.	233	319	51,415	329	161.2	1.03
Vermilion, Minn.	195	435	41,679	485	95.8	1.11
Rett Lake, Minn.	1,461	1,765	209,484	1,966	118.7	1.11
Leech Lake, Minn.	365	502	90,689	376	180.7	0.75
White Earth, Minn.	453	808	134,029	543	165.9	0.67
Red Lake, Minn.	11,152	15,993	1,268,837	7,992	79.3	0.50
Red River, Wis.	3,479	5,284	587,714	3,057	111.2	0.58
Lac Court Oreilles, Wis.	1,217	3,538	16,848	641	4.8	0.18
Lac du Flambeau, Wis.	932	1,436	481	11	0.3	0.01
Menominee, Wis.	3,582	6,216	189,674	4,081	30.5	0.66
Total Third and Other Workings	23,069	36,296	2,590,850	19,481	71.4	0.54

<u>All Workings</u>						
Wab-Fox, Iowa	55	706	17,054	226	24.2	0.32
Grand Portage, Minn.	1,782	2,774	2,754,974	6,241	993.1	2.25
Vermilion, Minn.	339	927	209,121	1,119	225.6	1.21
Rett Lake, Minn.	9,061	12,502	1,059,096	6,411	84.7	0.51
Leech Lake, Minn. (d)	5,215	6,837	667,034	2,214	97.6	0.32
White Earth, Minn. (e)	1,400	3,080	737,661	2,324	239.5	0.78
Red Lake, Minn.	36,984	55,732	9,762,706	26,978	175.2	0.48
Red River, Wis.	15,436	28,270	10,191,842	27,805	360.5	0.98
Lac Court Oreilles, Wis.	17,408	34,189	2,025,845	15,854	59.3	0.46
Lac du Flambeau, Wis.	14,863	30,766	819,831	4,801	26.6	0.16
Menominee, Wis.	38,691	65,635	12,249,917	54,337	186.6	0.83
Total, All Workings	141,234	241,418	40,495,081	148,380	167.7	0.61

Includes work done on

Bureau-State Funds:

(d) Leech Lake, Minn.	-	2,307	96,722	486	41.9	0.21
(e) White Earth, Minn.	-	982	252,747	693	257.4	0.71

Total, Bureau-State Funds	-	3,289	349,469	1,179	106.3	0.36
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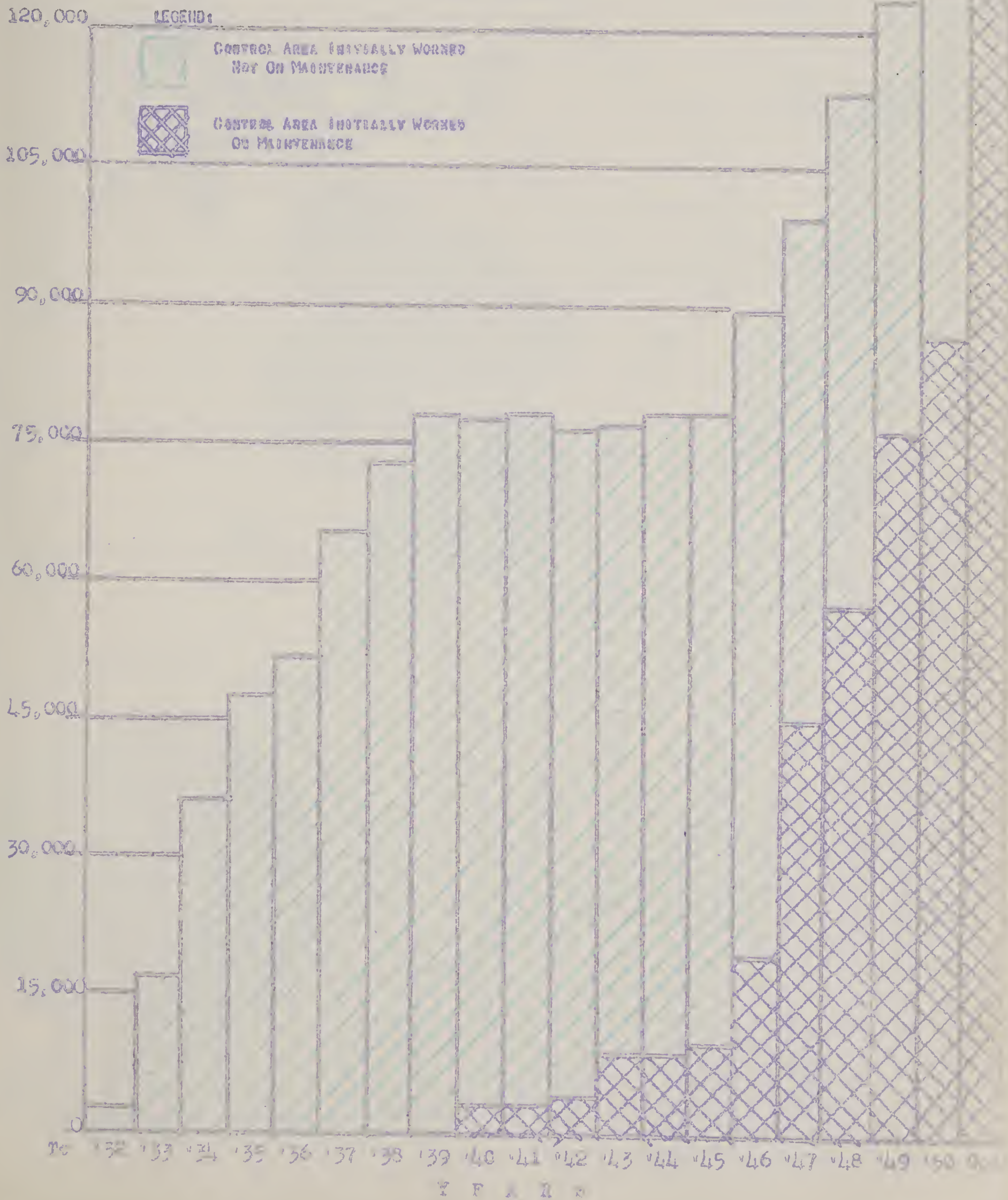
Text Table 16. Indian Service Funds Spent on Blister Rust Control, North Central Region, Calendar Year 1950
(All appropriated Indian Service Funds, except Menominee Tribal Funds)

Agency	Reservation	Period: Jan. to June 30, 1950		Period: July 1 to Dec 31, 1950		Period: Calendar Year 1950	
		Salaries	Non-Salaries	Total Salaries	Non-Salaries	Total Salaries	Non-Salaries
Consolidated Chippewa, Minnesota	Grand Portage	-	-	\$2,502.20	\$422.64	\$2,924.84	\$422.64
	Hett Lake	\$305.45	\$102.00	\$407.45	185.40	1,823.80	297.40
	Cass Lake Office	800.00	428.32	1,228.32	1,478.00	2,100.00	606.32
	Sub-Total	1,105.45	530.32	1,635.77	796.04	6,226.64	1,326.36
	Red Lake	4,834.00	724.00	5,558.00	136.53	896.56	860.53
Great Lakes, Wisconsin	Bad River	3,254.67	352.00	3,606.67	140.19	4,290.42	492.19
	Lac Court Oreilles	4,556.96	628.17	5,185.13	297.64	5,348.55	925.81
	Lac du Flambeau	960.41	90.25	1,050.66	-	-	90.25
	Sub-Total	8,772.04	1,070.42	9,842.46	437.83	9,638.97	1,508.25
	Indian Service Fund	3,134.80	377.43	3,512.23	93.00	3,791.80	470.43
Menominee, Wisconsin	Tribal Funds	3,134.80	377.43	3,512.23	93.00	3,791.80	470.43
	Sub-Total	6,269.60	754.86	7,024.46	186.00	7,583.60	940.86
	All Funds	20,981.09	3,079.60	24,060.69	1,556.40	24,345.77	4,636.00
				22,789.37		43,770.46	
							48,406.46

Status of Control at End of Each Year as Shown

INDIAN SERVICE LANDS - NORTH CENTRAL REGION

Net Acres



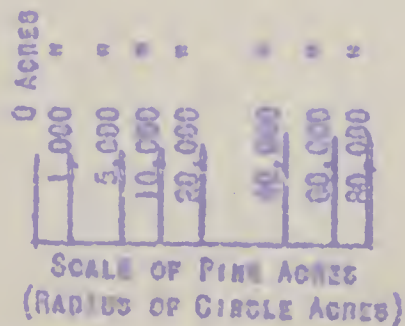
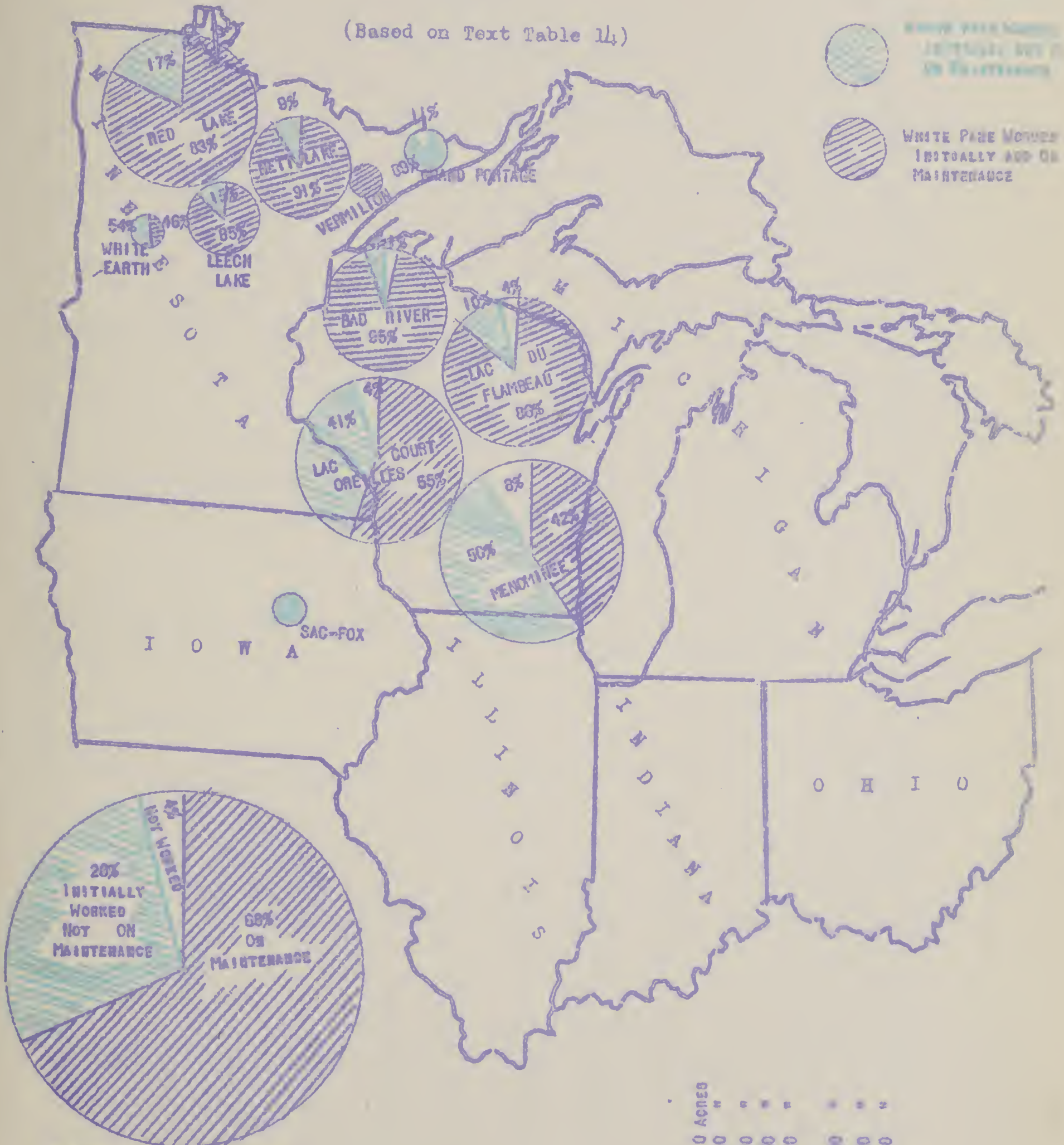
Status of Control by INDIAN RESERVATIONS

NORTH CENTRAL REGION

1950

(Based on Text Table 14)

LEGEND:



NORTH CENTRAL REGION
Total White Pine Area in
INDIAN SERVICE Control Problem
77,605 Acres

(1) Major cities in India



INDIAN SEX AND AGE DISTRIBUTION
Total India population 100%



INDIAN SEX AND AGE DISTRIBUTION
Total India population 100%

CHART 17

Number of Ribes Destroyed per Acre, All Workings,

By Indian Reservations

NORTH CENTRAL REGION

To December 31, 1950
(Based on Text Table 15)

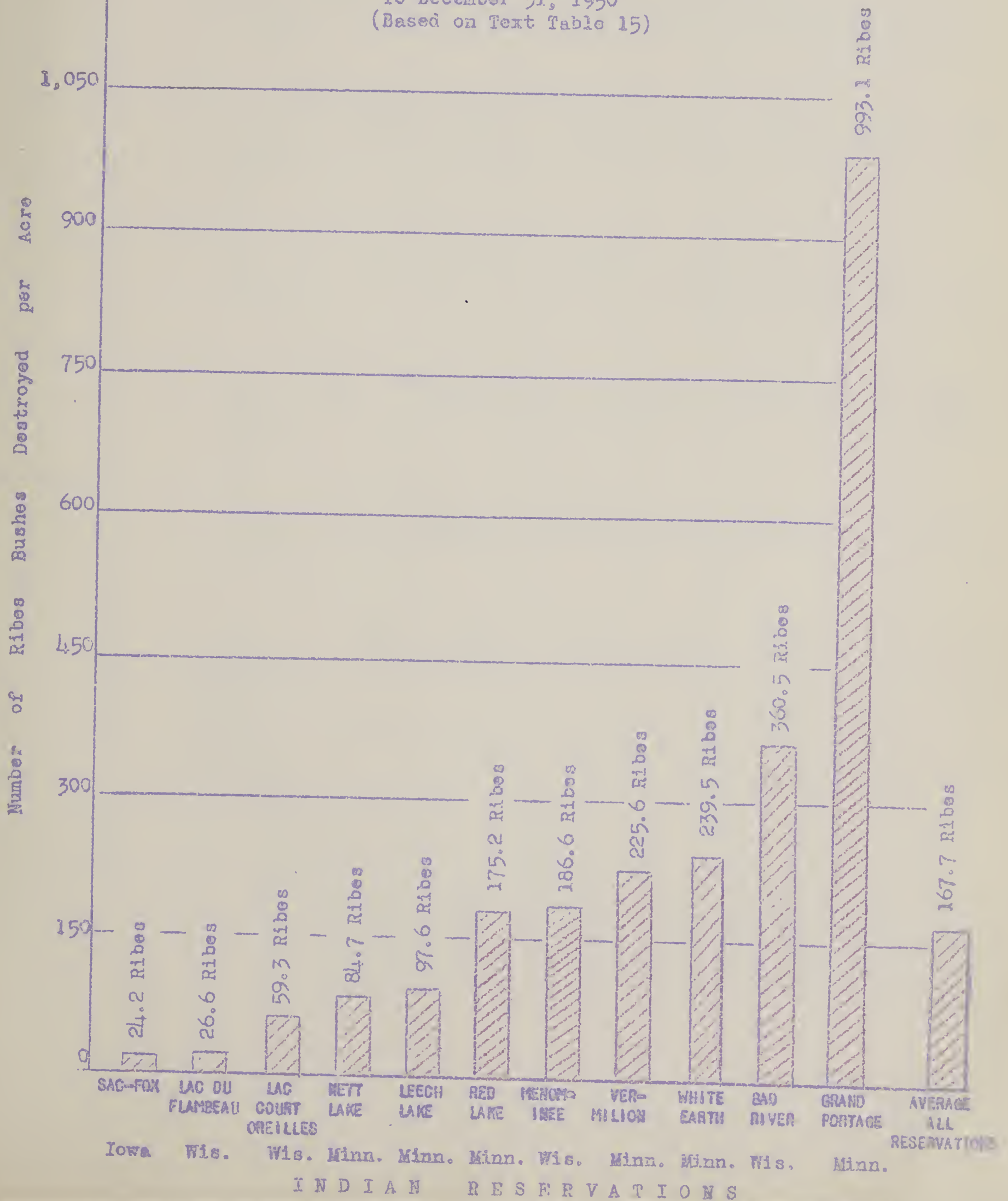


Table 1. Surveys Performed in North Central Region, Calendar Year 1950

State	Type of Survey	Acres Mapped		Acres Mapped		Acres Mapped		Acres Mapped		Total Acres Mapped, Net	Non-Days Dead
		Previously		Previously		Previously		Previously			
		White	Control	White	Control	White	Control	White	Control		
		Pine	Area	Pine	Area	Pine	Area	Pine	Area		
Illinois	Pre-eradication	-	-	49	272	-	-	49	272		
	Re-Survey	7	195	-	-	7	195	-	-		
	Post-Check	10	152	-	-	2	45	8	107		
	Total	17	347	49	272	9	240	57	379		
Indiana	Pre-eradication	-	-	336	1,729	-	-	336	1,729		
	Re-Survey	71	1,898	146	101	24	1,001	193	998		
	Post-Check	641	7,382	410	739	47	1,432	1,004	6,689		
	Total	712	9,280	892	2,569	71	2,433	1,533	8,416		
Iowa	Pre-eradication	-	-	7	135	-	-	7	135		
Ohio	Pre-eradication	-	-	956	2,341	-	-	956	2,341		
	Re-Survey	195	3,003	50	-	29	2,046	216	957		
	Post-Check	1,640	8,606	730	1,147	164	3,651	2,206	6,102		
	Total	1,835	11,609	1,736	3,488	193	5,697	3,432	9,190		
Michigan	Pre-eradication	-	-	2,435	11,269	-	-	2,435	11,269		
	Re-Survey	986	4,653	177	429	482	2,640	681	2,442		
	Post-Check	33,157	73,419	4,354	8,189	9,442	18,462	28,069	63,116		
	Total	34,143	78,072	6,966	19,887	9,924	21,102	31,185	76,851		
Minnesota	Pre-eradication	-	-	644	1,499	-	-	644	1,499		
	Re-Survey	10,600	17,922	437	730	6,736	11,631	4,301	7,021		
	Post-Check	6,878	10,981	257	162	2,341	4,433	4,794	6,710		
	Total	17,478	28,903	1,138	2,391	9,077	16,064	9,435	15,230		
Wisconsin	Pre-eradication	-	-	18,562	49,401	-	-	18,562	49,401		
	Re-Survey	242	1,935	-	-	133	1,078	109	857		
	Post-Check	15,633	37,894	3,633	3,159	1,875	7,583	17,391	33,470		
	Total	15,875	39,829	42,195	52,560	2,008	8,661	26,062	83,728		
Region	Pre-eradication	-	-	23,058	65,946	-	-	23,058	66,946		
	Re-Survey	12,101	29,606	910	1,260	7,411	16,591	5,500	12,275		
	Post-Check	57,959	138,434	9,384	13,396	13,871	35,606	53,472	116,824		
	Total	70,060	168,040	33,352	80,602	21,282	52,197	82,030	196,046		

Table 2. Summary of Local Control by States and Operating Agencies
North Central Region, Calendar Year 1950

State	Operating Agency	Number Acres Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 8-Hour Man-Day Used
			Natural	Planted			
Initial Workings							
Illinois	Bureau-State	4	=	20	20	1,722	5
Indiana	Bureau-State	25	4	642	646	3,059	101
Iowa	Bureau-State	3	=	45	45	10,834	175
Ohio	Bureau-State	28	10	422	432	4,302	31
Michigan	Bureau-State	70	620	1,373	1,993	7,978	191
	Forest Service	14	475	864	1,339	3,440	449
	Total	141	1,095	2,237	3,332	41,118	643
Minnesota	Bureau-State	9	246	5	251	553	385
	Forest Service	2	221	=	221	264	387
	Total	11	467	5	472	817	772
Wisconsin	Bureau-State	60	10,808	752	11,560	36,639	1,605
	Forest Service	5	344	=	344	475	444
	Indian Service	11	1,944	=	1,944	3,595	427
	Total	76	13,096	752	13,848	40,709	2,576
Region	Bureau-State	204	11,688	3,259	14,947	419,867	2,508
	Forest Service	21	1,440	864	1,904	215,996	1,289
	Indian Service	11	1,944	=	1,944	17,521	427
Region Total, Initial		236	14,672	4,123	18,795	653,186	4,215

(Cont'd.)

Table 2. (Cont'd.) Summary of Local Control by States and Operating Agencies,
North Central Region, Calendar Year 1950

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 8-Hour Man-Days Used
			Natural	Planted			
Second Working							
Illinois	Bureau-State	1	-	-	20	1,127	1
Indiana	Bureau-State	21	19	407	2,109	21,389	70
Iowa	Bureau-State	1	-	35	200	22,474	11
Ohio	Bureau-State	22	-	432	1,911	1,497	11
Michigan	Bureau-State	47	8,030	465	8,495	80,063	820
	Forest Service	6	370	-	370	5,186	39
	Total	57	8,400	467	12,260	85,919	852
Minnesota	Bureau-State	9	390	76	1,061	40,166	162
	Forest Service	18	627	56	1,176	30,144	517
	Indian Service	5	518	-	715	61,812	561
	Total	32	1,535	132	2,952	132,122	1,240
Wisconsin	Bureau-State	49	6,043	389	19,874	56,946	602
	Forest Service	4	428	80	975	35,186	307
	Indian Service	7	3,390	-	5,176	86,784	2,254
	Total	60	9,861	469	25,925	178,916	2,163
Region	Bureau-State	151	14,482	1,807	42,563	219,062	2,090
	Forest Service	28	1,425	136	3,091	70,516	893
	Indian Service	12	3,708	-	5,891	148,596	2,915
Region Total, Second		191	29,615	2,943	51,545	438,174	5,898

(Cont'd.)

Table 2. (Cont'd.) Summary of Local Control by States and Operating Agencies,
North Central Region, Calendar Year 1950

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 2 Weeks 1500 Days Work
			Natural	Planted			
Third and Subsequent Workings							
Illinois	Bureau-State	3	-	74	427	19,374	136
Indiana	Bureau-State	20	162	201	5,213	19,390	35
Iowa	Bureau-State	3	25	30	214	21,052	135
Ohio	Bureau-State	4	264	110	1,034	3,665	29
Michigan	Bureau-State	26	2,917	294	6,784	55,366	1,000
	Forest Service	8	1,268	190	2,320	18,893	455
	Total	34	4,185	484	9,104	74,259	1,459
Minnesota	Bureau-State	6	29	190	547	15,578	107
	Forest Service	15	598	564	1,424	49,032	1,402
	Indian Service	4	125	-	330	25,716	311
	Total	25	752	754	2,291	90,326	1,880
Wisconsin	Bureau-State	2	1,879	-	2,340	85,380	245
	Forest Service	5	63	1,035	1,802	39,281	653
	Indian Service	5	1,392	-	2,248	60,369	1,207
	Total	12	3,334	1,035	6,390	186,030	2,809
Region	Bureau-State	64	5,313	906	14,555	211,815	2,521
	Forest Service	28	1,929	1,789	5,536	107,206	2,654
	Indian Service	9	1,517	-	2,578	86,085	1,518
Region Total, Third and Subsequent		101	8,759	2,691	22,669	405,106	6,533

(Cont'd.)

Table 2. (Cont'd.) Summary of Local Control by States and Operating Agencies
North Central Region, Calendar Year 1950

State	Operating Agency	Number Areas Worked	Acres White Pine Protected		Acres Worked	Number Ribes Destroyed	Total 8-Hour Man-Days Used
			Natural	Planted			
			Total				
All Workings							
Illinois	Bureau-State	8	=	97	522	22,223	115
Indiana	Bureau-State	66	192	1,253	8,621	58,026	255
Iowa	Bureau-State	12	35	110	596	91,370	125
Ohio	Bureau-State	55	224	970	4,624	8,444	7
Michigan	Bureau-State	143	11,567	2,132	32,102	148,644	2,044
	Forest Service	28	2,113	1,054	6,400	79,330	917
Total		171	13,680	3,186	38,502	227,974	2,961
Minnesota	Bureau-State	24	665	271	2,161	94,181	985
	Forest Service	35	1,446	620	2,854	114,192	2,316
	Indian Service	9	443	=	1,045	87,528	872
Total		68	2,554	891	6,060	295,901	4,173
Wisconsin	Bureau-State	111	18,730	1,141	58,659	427,636	3,216
	Forest Service	14	835	1,115	3,252	200,198	1,404
	Indian Service	23	6,726	=	11,019	164,674	3,908
Total		148	26,291	2,256	72,930	792,508	8,528
Region	Bureau-State	419	31,483	5,974	107,355	850,504	7,119
	Forest Service	77	4,394	2,789	12,506	393,720	4,657
	Indian Service	32	7,169	=	12,064	252,202	4,860
Region Total, All Workings		528	43,046	8,763	131,925	1,496,466	16,646

Table 2A. Summary of Local Control by States and Ownership Classes
North Central Region, Calendar Year 1950

State	Ownership Class	Forest	Number of Areas	Acres White Pine Protected	Acres Worked	Number Ribes Destroyed	8-Hour Men-Days Used
			Initial	Working			
Ill.	St. & Priv.	Private	4	20	95	1,722	5
Ind.	St. & Priv.	Non-Fed. Pub.	6	363	1,268	3,212	20
		Private	19	283	1,771	33,235	81
	State Total,	Indiana	25	646	3,039	36,447	101
Iowa	St. & Priv.	Non-Fed. Pub.	4	23	116	23,349	120
		Private	4	22	103	17,485	56
	State Total,	Iowa	8	45	219	40,834	176
Ohio	St. & Priv.	Non-Fed. Pub.	5	194	714	2,198	17
		Private	23	238	945	2,104	14
	State Total,	Ohio	28	432	1,659	4,302	31
Wis.	St. & Priv.	Non-Fed. Pub.	17	731	2,294	2,817	41
		Private	41	775	4,259	10,381	148
	Sub-Total		58	1,506	6,553	13,198	189
	Forest	Huron N. F.	6	685	1,490	1,947	31
	Service	Manistee N.F.	14	681	1,785	2,374	20
		Hiawatha N.F.	1	220	480	22,318	132
		Ottawa N. F.	5	240	810	28,629	271
	Sub-Total		26	1,826	4,565	55,268	454
	State Total,	Michigan	84	3,332	11,118	68,466	643
Minn.	St. & Priv.	Non-Fed. Pub.	4	238	516	33,905	285
		Private	5	13	37	4,532	51
	Sub-Total		9	251	553	38,437	336
	Forest	Superior N.F.	1	180	197	27,989	317
	Service	Chippewa N.F.	1	41	67	7,027	70
	Sub-Total		2	221	264	35,016	387
	State Total,	Minnesota	11	472	817	73,453	723
Neb.	St. & Priv.	Non-Fed. Pub.	11	7,610	26,200	252,250	974
		Private	49	3,950	10,439	32,460	691
	Sub-Total		60	11,560	36,639	284,710	1,665
	Forest Serv.	Chequamegon N.F.	5	344	475	125,731	144
	Indian Serv.	Bad River	1	30	104	-	-
		Lac Court Oreilles	2	416	570	1,478	35
		Lac du Flambeau	6	1,078	2,016	4,641	88
		Menominee	2	420	905	11,402	304
	Sub-Total		11	1,944	3,595	17,521	427
	State Total,	Wisconsin	76	13,818	40,709	427,962	2,536
Region	St. & Priv.	Non-Fed. Pub.	47	9,199	31,158	317,731	1,457
		Private	145	5,301	17,654	101,919	1,046
	Sub-Total		192	14,460	48,812	419,650	2,503
	Forest Service All Forests		33	2,391	5,304	216,015	1,285
	Indian Service All Forests		11	1,944	3,595	17,521	427
Region Total, Initial			236	18,795	57,711	653,186	4,215

(Cont'd.)

Table 2A. Cont'd. Summary of Local Control by States and Ownership Classes
North Central Region, Calendar Year 1950

State	Ownership Class	Forest	Number of Areas	Acres White Pine Protected	Acres Worked	Number Ribes Destroyed	8-Hour Man-Days Used
			Second Working				
Ill.	St. & Priv.	Private	1	3	10	1,327	4
Ind.	St. & Priv.	Non-Fed. Pub.	2	18	139	16	2
		Private	19	408	2,270	11,173	75
	State Total, Indiana		21	426	2,409	11,189	77
Iowa	St. & Priv.	Non-Fed. Pub.	1	35	128	29,474	114
Ohio	St. & Priv.	Non-Fed. Pub.	1	181	818	-	2
		Private	22	251	1,093	497	9
	State Total, Ohio		23	432	1,911	497	11
Mich.	St. & Priv.	Non-Fed. Pub.	34	7,421	14,993	50,506	565
		Private	11	1,024	2,107	29,557	253
	Sub-Total		45	8,445	17,100	80,063	818
	Forest	Manistee N. F.	7	320	955	3,241	16
	Service	Hewatha N. F.	1	100	225	1,945	26
	Sub-Total		8	420	1,180	5,186	42
	State Total, Michigan		53	8,865	18,280	85,249	860
Minn.	St. & Priv.	Non-Fed. Pub.	6	380	651	28,010	317
		Private	3	86	410	12,156	65
	Sub-Total		9	466	1,061	40,166	382
	Forest	Superior N. F.	5	211	276	17,674	328
	Service	Chippewa N. F.	13	472	900	12,470	219
	Sub-Total		18	683	1,176	30,144	547
	Indian	Grand Portage	2	63	184	46,904	323
	Service	Red Lake	3	250	531	14,908	238
	Sub-Total		5	313	715	61,812	561
	State Total, Minnesota		22	1,000	2,952	132,122	1,570
Wis.	St. & Priv.	Non-Fed. Pub.	10	1,819	5,235	44,911	505
		Private	39	4,613	14,439	11,635	97
	Sub-Total		49	6,432	19,674	56,546	602
	Forest Serv.	Chequamegon N. F.	1	508	975	35,186	30
	Indian	Bad River	1	34	104	15,729	125
	Service	Leo Court Oreilles	2	2,062	3,000	40,361	1,043
		Lac du Flambeau	1	294	482	1,563	30
		Monominee	3	1,000	1,580	29,131	1,159
	Sub-Total		7	3,898	5,176	86,701	2,387
	State Total, Wisconsin		60	10,330	25,825	178,518	3,967
Region	St. & Priv.	Non-Fed. Pub.	54	9,854	21,994	152,917	1,566
		Private	95	6,385	20,329	66,145	523
	Sub-Total		149	16,239	42,323	219,062	2,089
	Forest Service	All Forests	30	1,604	3,331	70,516	834
	Indian Service	All Forests	12	2,706	5,891	113,596	2,945
Region Total, Second			191	21,558	51,345	438,174	5,098

(Cont'd.)

Table 2A. Cont'd. Summary of Local Control by States and Ownership Classes
North Central Region, Calendar Year 1950

State	Ownership Class	Forest	Number of Areas	Acres White Pine Protected	Acres Worked	Number Ribes Destroyed	8-Hour Man-Days Used	
Third and Subsequent Workings								
Ill.	St. & Priv.	Private	3	74	417	19,374	136	
Ind.	St. & Priv.	Non-Fed. Pub.	3	136	900	2,509	14	
		Private	17	237	2,313	7,881	71	
	State Total, Indiana		20	373	3,213	10,390	85	
Iowa	St. & Priv.	Non-Fed. Pub.	2	55	189	20,779	129	
		Private	1	10	25	283	6	
	State Total, Iowa		3	65	214	21,062	135	
Ohio	St. & Priv.	Non-Fed. Pub.	3	390	1,008	3,635	29	
		Private	1	10	26	30	Tr.	
	State Total, Ohio		4	400	1,034	3,665	29	
Mich.	St. & Priv.	Non-Fed. Pub.	18	2,401	5,091	13,681	544	
		Private	7	780	1,573	41,682	455	
		Sub-Total	25	3,181	6,664	55,363	999	
	Forest Service	Manistee N. F.	1	30	120	3	1	
		Hiawatha N. F.	1	265	450	1,859	20	
		Ottawa N. F.	7	1,193	1,870	17,034	439	
		Sub-Total	9	1,488	2,440	18,896	460	
	State Total, Michigan		34	4,669	9,104	74,259	1,459	
	Minn.	St. & Priv.	Non-Fed. Pub.	3	200	436	13,845	171
			Private	3	19	111	1,733	16
Sub-Total			6	219	547	15,578	187	
Forest Service		Superior N. F.	11	1,029	1,254	41,394	1,261	
		Chippewa N. F.	4	133	160	7,638	121	
		Sub-Total	15	1,162	1,414	49,032	1,382	
Indian Service		Grand Portage	1	25	44	7,869	62	
		Nett Lake	2	39	110	17,727	231	
		Red Lake	1	61	176	120	18	
State Total, Minnesota		25	1,506	2,291	90,326	1,880		
Wis.	St. & Priv.	Non-Fed. Pub.	2	1,879	2,345	86,380	949	
		Forest Service	Chequamegon N. F.	1	63	112	9,172	62
			Nicolet N. F.	4	1,035	1,690	30,109	591
	Sub-Total		5	1,098	1,802	39,281	653	
	Indian Service	Bad River	1	950	1,290	45,976	660	
		Lac Court Oreilles	1	212	538	417	70	
		Menominee	3	230	420	13,976	477	
	State Total, Wisconsin		12	4,369	6,396	186,030	2,809	
	Region	St. & Priv.	Non-Fed. Pub.	31	5,061	9,970	140,829	1,836
Private			32	1,130	4,465	70,983	684	
Sub-Total			63	6,191	14,435	211,812	2,520	
Forest Service All Forests		29	3,748	5,656	107,209	2,495		
Indian Service All Forests		9	1,517	2,578	86,085	1,518		
Region Total, Third and Subsequent Workings			101	11,456	22,669	405,106	6,533	

(Cont'd.)

Table 2k. (Cont'd.) Summary of Local Control by States and Ownership Classes
North Central Region, Calendar Year 1950

State	Ownership Class	Forest	Number of Acres	Acres White Pine Protected	Acres Worked	Number Ribes Destroyed	Estimated Man-Quads
			All Workings				
Ill.	St. & Priv.	Private	9	97	522	22,223	1
Ind.	St. & Priv.	Non-Fed. Pub.	11	517	2,327	5,737	30
		Private	55	928	6,354	52,283	227
	State Total, Indiana		66	1,445	8,681	58,010	257
Iowa	St. & Priv.	Non-Fed. Pub.	7	113	463	73,602	365
		Private	5	32	133	17,763	62
	State Total, Iowa		12	145	596	91,365	427
Ohio	St. & Priv.	Non-Fed. Pub.	9	765	2,570	5,833	48
		Private	46	499	2,064	2,631	23
	State Total, Ohio		55	1,264	4,634	8,464	71
Mich.	St. & Priv.	Non-Fed. Pub.	69	10,553	22,378	67,004	1,151
		Private	59	2,573	7,939	81,620	896
	Sub-Total		128	13,126	30,317	148,624	2,047
	Forest Service	Huron N. F.	6	685	1,490	1,947	34
		Manistee N. F.	22	1,031	2,860	5,618	38
		Hiawatha N. F.	3	585	1,155	26,122	170
		Ottawa N. F.	12	1,433	2,680	45,663	710
	Sub-Total		43	3,734	8,185	79,350	952
	State Total, Michigan		171	16,860	38,502	227,974	3,000
Minn.	St. & Priv.	Non-Fed. Pub.	13	818	1,603	75,760	633
		Private	11	118	558	18,421	152
	Sub-Total		24	936	2,161	94,181	785
	Forest Service	Superior N. F.	17	1,420	1,727	87,057	1,306
		Chippewa N. F.	18	646	1,127	27,135	410
	Sub-Total		35	2,066	2,854	114,192	1,716
	Indian Service	Grand Portage	3	93	228	54,773	305
		Mett Lake	2	39	110	17,727	861
		Red Lake	4	311	707	15,028	856
	Sub-Total		9	443	1,045	87,528	2,022
	State Total, Minnesota		63	2,509	3,899	201,720	3,738
Wis.	St. & Priv.	Non-Fed. Pub.	23	11,308	33,781	383,541	2,628
		Private	88	8,563	24,878	44,095	788
	Sub-Total		111	19,871	58,659	427,636	3,416
	Forest Service	Chequamegon N. F.	10	915	1,562	170,032	613
		Nicolet N. F.	4	1,035	1,690	30,109	991
	Sub-Total		14	1,950	3,252	200,141	1,604
	Indian Service	Bad River	3	1,012	1,508	61,703	785
		Lac Court Oreilles	5	2,690	4,108	42,236	1,405
		Lac du Flambeau	7	1,372	2,498	6,204	138
		Menominee	8	1,650	2,905	54,509	1,340
	Sub-Total		23	6,724	11,019	163,452	2,668
	State Total, Wisconsin		134	26,595	70,000	591,088	6,084
Region	St. & Priv.	Non-Fed. Pub.	132	24,074	63,122	611,477	6,699
		Private	272	12,816	42,448	239,047	2,253
	Sub-Total		404	36,890	105,570	850,524	8,952
	Forest Service	All Forests	92	7,752	16,359	395,709	1,300
	Indian Service	All Forests	32	7,169	12,060	252,292	1,350
Region Total, All Workings			506	51,805	151,925	1,400,066	16,340

Table 3. Summary of Local Control by Ownership Classes
and Operating Agencies, North Central Region
Calendar Year 1950

Ownership Class	Operating Agency	Number of Areas	Acres White Pine Protected	Acres Worked	Ribes Destroyed	8-Hour Man-Days Used
		Initial	Working			
Non-Federal Public	Bureau-State	47	9,159	31,158	317,731	1,457
Private	Bureau-State	145	5,301	17,654	101,919	1,046
Forest Service	Bureau-State	12	487	1,425	17	5
	Forest Service	21	1,904	3,879	215,998	1,280
	Sub-Total	33	2,391	5,304	216,015	1,285
Indian Service	Indian Service	11	1,944	3,595	17,521	427
All Ownerships	All Agencies	236	18,795	57,711	653,186	4,215
		Second	Working			
Non-Federal Public	Bureau-State	54	9,854	21,994	152,917	1,566
Private	Bureau-State	95	6,385	20,329	66,115	523
Forest Service	Bureau-State	2	50	240	-	1
	Forest Service	28	1,561	3,091	70,516	893
	Sub-Total	30	1,611	3,331	70,516	894
Indian Service	Indian Service	12	3,708	5,891	118,596	2,915
All Ownerships	All Agencies	191	21,558	51,545	438,174	5,898
		Third and Subsequent	Workings			
Non-Federal Public	Bureau-State	31	5,061	9,970	110,829	1,836
Private	Bureau-State	32	1,130	4,465	70,983	684
Forest Service	Bureau-State	1	30	120	3	1
	Forest Service	28	3,718	5,536	107,206	2,494
	Sub-Total	29	3,748	5,656	107,209	2,495
Indian Service	Indian Service	9	1,517	2,578	86,085	1,518
All Ownerships	All Agencies	101	11,456	22,669	405,106	6,533
		All	Workings			
Non-Federal Public	Bureau-State	132	21,074	63,122	611,477	4,859
Private	Bureau-State	272	12,816	42,148	239,017	2,253
Forest Service	Bureau-State	15	567	1,785	20	7
	Forest Service	77	7,183	12,506	393,720	4,667
	Sub-Total	92	7,750	14,291	393,740	4,674
Indian Service	Indian Service	32	7,169	12,061	252,202	4,860
All Ownerships	All Agencies	528	51,809	131,925	1,496,466	16,616

Table 4. Results of Checking after Ribes Eradication by States and Ownership Classes,
North Central Region, Calendar Year 1950

Ownership Class	Number of Areas	Checking After		Classification of Worked Areas on Basis of Ribes F.L.S. per Acre					Percent Acres Showing 25 FLS or Less per Acre After Eradication
		Acres Worked and Checked	Strip Acres	Ribes Found		Ribes per Acre Bushes F.L.S.	A c r e s	A c r e s	
				Bushes	F.L.S.				
Private	5	357	9.00	43	92.7	4.4	332	25	100.0
Illinois									
Non-Fed. Pub.	4	678	4.70	5	16.0	1.1	678	-	100.0
Private	32	4,186	75.70	63	300.0	0.8	3,851	130	95.1
Total	36	4,864	80.40	68	316.0	0.8	4,529	130	95.8
Indiana									
Non-Fed. Pub.	7	463	15.00	86	142.0	5.7	463	-	100.0
Private	5	133	10.00	104	125.0	10.4	125	8	100.0
Total	12	596	25.00	190	267.0	7.6	588	8	100.0
Iowa									
Non-Fed. Pub.	5	1,204	8.80	30	77.0	3.4	1,204	-	100.0
Private	6	570	8.00	4	16.0	0.5	570	-	100.0
Total	11	1,774	16.80	34	93.0	2.0	1,774	-	100.0
Ohio									
Non-Fed. Pub.	69	22,378	402.50	286	477.5	0.7	22,296	82	100.0
Private	59	7,939	241.40	152	306.0	0.6	7,769	170	100.0
Forest Service	43	8,185	248.70	247	487.0	1.0	7,990	195	100.0
Total	171	38,502	892.60	685	1,270.5	0.8	38,055	447	100.0
Michigan									
Non-Fed. Pub.	13	1,603	51.66	78	165.9	1.5	1,603	-	100.0
Private	10	552	17.26	96	118.3	5.6	537	15	100.0
Forest Service	35	2,854	90.90	171	364.7	1.9	2,777	54	99.2
Indian Service	9	1,045	26.20	130	169.2	5.0	1,001	44	95.8
Total	67	6,054	186.02	475	818.1	2.6	5,916	69	98.9
Minnesota									

(Continued)

Table 4. (Cont'd.) Results of Checking after Ribes Eradication by States and Ownership Classes
North Central Region, Calendar Year 1950

Ownership Class	Number of Areas	Checking After Eradication				Classification of Worked Areas on Basis of Ribes F.L.S. per Acre				Percent Average Showing 25 FLS or Less per Acre After Eradication
		Acre Worked and Checked	Ribes Found		Ribes per Acre Bushes F.L.S.	Remaining after Eradication		Acre s	Acre s	
			Strip Acres	Bushes		0.0-25.0 FLS				
						Acre s	Acre s			
Non-Fed. Pub.	19	31,374	686.70	794	2,020.7	Wisconsin	31,374	-	-	100.0
Private	64	14,334	215.20	179	336.4	0.8	14,278	56	-	100.0
Forest Service	10	3,024	72.60	317	485.9	4.4	3,024	-	-	100.0
Indian Service	20	10,622	154.70	221	485.6	1.4	10,622	-	-	100.0
Total	113	59,354	1,129.20	1,511	3,328.6	1.3	59,298	56	-	100.0
Non-Fed. Pub.	117	57,700	1,169.36	1,279	2,899.1	Region	57,618	82	-	100.0
Private	181	28,071	576.56	641	1,294.4	1.1	27,462	404	205	99.3
Forest Service	88	14,063	412.20	735	1,337.6	1.8	13,791	249	23	99.8
Indian Service	29	11,667	180.90	351	654.8	1.9	11,623	-	44	99.6
Region Total	415	112,501	2,339.02	3,006	6,185.9	1.3	110,194	735	272	99.6

Table 5. Control Area Permits, North Central Region, Calendar Year 1950

State	Number of Applications Received	Number of Control Area Permits Approved	Number of Applications		Percent Applications Approved	Approximate Number Man-Days Used
			Rejected :	: Voluntarily Cancelled by Applicant		
Michigan	126	73	18	25	62.9	6
Minnesota	108	101	4	3	93.5	11
Ohio	9	4	5	-	44.4	1
Wisconsin	215	211	1	3	98.1	4
Region Total	448	389	28	31	86.8	22

Table 6. Status of Control by States and Districts, North Central Region
as of December 31, 1950
Not done

District	Acres Total Control Problem				Acres Initially Worked				Acres Not Initially Worked		Acres On Main System	
	Natural		Total		Natural		Total		White		Pine	
	White	Pine	White	Pine	White	Pine	White	Pine	White	Pine	White	Pine
Entire State	231	1,755	1,986	13,429	226	1,675	1,901	11,218	85	2,211	590	1,923
Entire State	323	9,922	10,245	91,889	323	8,391	8,714	78,732	1,531	15,157	7,264	61,504
Entire State	714	5,221	5,935	50,501	684	2,787	3,471	34,557	2,484	15,944	1,604	18,851
Entire State	3,158	17,983	21,141	213,374	3,049	13,056	16,105	178,498	5,036	34,876	7,470	87,898
L. Peninsula	186,868	63,799	250,667	850,668	178,835	60,410	239,245	782,274	11,422	68,394	100,648	343,270
U. Peninsula	129,595	15,705	145,300	334,219	112,115	15,686	127,801	292,670	17,469	41,549	64,642	114,211
Entire State	316,463	79,504	395,967	1,184,887	290,950	76,096	367,046	1,074,944	28,891	109,943	165,290	457,481
Central	76,043	4,014	80,057	236,220	61,074	3,434	64,508	183,078	15,549	53,142	20,892	14,781
North Eastern	76,737	3,836	80,573	128,005	35,287	3,836	39,123	53,866	41,450	74,139	15,803	21,450
North Western	73,442	4,500	77,942	176,905	55,604	4,017	59,621	129,985	18,321	46,920	27,852	49,101
Entire State	226,222	12,350	238,572	541,130	151,965	11,287	163,252	366,929	75,320	174,201	64,547	115,321
Eastern	176,381	19,028	195,409	668,016	156,210	18,340	174,550	577,630	20,859	90,386	70,808	238,430
Western	243,086	17,055	260,141	809,338	216,577	15,598	232,175	655,528	27,968	143,810	142,157	377,859
Entire State	419,469	36,083	455,552	1,477,354	372,787	33,938	406,725	1,243,158	48,827	234,196	212,965	616,289
Entire Region	966,580	162,818	1,129,398	3,572,564	819,994	147,230	967,224	2,988,036	162,174	521,528	459,727	1,389,312

Table 7. Status of Control by States and Ownership Classes,
North Central Region, on December 31, 1950
Net Acres

Ownership Class	Acres Total Control Problem				Acres Initially Worked				Acres Not Initially Worked				On Maintenance	
	Natural		Total		Natural		Total		Natural		Total		White	
	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine
Illinois														
Non-Fed. Public	197	912	1,109	6,203	192	910	1,102	6,089	7	114	543	1		
Private	34	843	877	7,226	34	765	799	5,129	78	2,097	47			
Total	231	1,755	1,986	13,429	226	1,675	1,901	11,218	85	2,211	590			
Indiana														
Forest Service	-	18	18	179	-	18	18	179	-	-	18			
Non-Fed. Public	99	3,070	3,169	18,858	99	2,958	3,057	17,971	112	887	2,384			
Private	224	6,834	7,058	72,852	224	5,415	5,639	60,582	1,419	12,270	4,862			
Total	323	9,922	10,245	91,889	323	8,391	8,714	78,732	1,531	13,157	7,246			
Iowa														
Indian Service	-	45	45	500	-	45	45	500	-	-	-			
Non-Fed. Public	348	231	579	3,568	348	230	578	3,516	1	52	11			
Private	366	4,945	5,311	46,433	316	2,512	2,828	30,541	2,483	15,892	1,590			
Total	714	5,221	5,925	50,501	664	2,787	3,451	34,557	2,484	15,944	1,601			
Ohio														
Forest Service	-	515	515	4,029	-	515	515	4,029	-	-	515			
Non-Fed. Public	854	7,133	7,987	53,114	854	4,858	5,712	42,558	2,275	10,556	2,253			
Private	2,304	10,335	12,639	156,231	2,195	7,683	9,878	131,911	2,761	24,320	4,702			
Total	3,158	17,983	21,141	213,374	3,049	13,056	16,105	178,499	5,036	34,876	7,470			
Michigan														
Forest Service	28,930	34,154	63,084	166,709	28,537	34,154	62,691	165,359	393	1,350	42,170			
Nat'l Park Serv.	179	-	179	1,530	15	-	15	120	164	1,410	-			
Non-Fed. Pub.	92,628	30,518	123,146	300,353	89,358	29,327	118,685	282,936	4,461	17,417	64,501			
Private	194,726	14,832	209,558	716,295	173,070	12,615	185,685	626,529	23,873	89,766	59,539			
Total	416,463	79,504	495,967	1,184,891	400,980	76,096	467,076	1,074,944	28,891	109,943	165,890			

(Cont'd.)

Table 7. (Cont'd.) Status of Control by Service and Ownership Class, North Central Region, on December 31, 1950
Not Acre

Ownership Class	Acre Total Control Problem				Acre Initially Worked				Acre Not Initially Worked				Acre on Maintenance	
	Natural		Total		Natural		Total		Initially		Control		White	Control
	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine	White Pine
Minnesota														
Forest Service	72,078	5,244	77,322	124,508	31,996	5,244	37,240	55,869	40,082	68,639	19,201	33,444	19,201	33,444
Indian Service	21,596	329	21,925	32,354	21,473	329	21,802	32,145	123	209	17,619	21,596	17,619	21,596
Non-Fed. Public	47,359	6,407	53,766	112,064	32,624	5,374	37,998	74,397	15,768	37,667	12,754	21,000	12,754	21,000
Private	85,189	370	85,559	272,204	65,872	340	66,212	204,518	19,347	67,686	14,977	36,377	14,977	36,377
Total	226,222	12,350	238,572	541,130	151,965	11,287	163,252	366,929	75,320	174,201	64,547	115,339	64,547	115,339
Wisconsin														
Forest Service	22,909	10,200	33,109	59,288	22,028	10,200	32,228	57,578	881	1,710	15,936	30,000	15,936	30,000
Indian Service	54,963	672	55,635	98,381	52,097	672	52,769	92,771	2,866	5,610	35,039	61,000	35,039	61,000
Non-Fed. Public	88,509	15,581	104,090	291,909	87,160	15,179	102,339	289,543	1,751	2,366	61,049	172,000	61,049	172,000
Private	253,066	9,630	262,696	1,027,776	211,502	7,887	219,389	803,266	173,322	221,510	170,911	450,000	170,911	450,000
Total	419,469	36,083	455,552	1,177,354	372,787	33,938	406,725	1,243,158	18,827	234,196	212,965	616,200	212,965	616,200
Region														
Forest Service	123,917	50,131	174,048	354,713	82,561	50,131	132,692	283,014	41,356	71,699	76,840	124,000	76,840	124,000
Indian Service	76,559	1,046	77,605	131,235	73,570	1,046	74,616	125,416	2,989	5,819	52,654	86,000	52,654	86,000
Nat'l Park Serv.	179	-	179	1,530	15	-	15	120	164	1,410	-	-	-	-
Non-Fed. Public	229,924	63,852	293,846	786,069	210,635	58,836	269,471	717,010	24,375	69,059	143,575	372,000	143,575	372,000
Private	535,931	47,789	583,720	2,299,017	453,213	37,217	490,430	1,662,476	93,290	436,541	186,658	779,000	186,658	779,000
Region Total	966,580	162,818	1,129,398	3,572,564	819,994	147,230	967,224	2,988,936	162,174	584,528	459,727	1,389,300	459,727	1,389,300

Table 8. Summary of Local Control by States, Workings, and Ownership Classes,
From Inception to December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per		Average No. Ribes Destroyed Per Man-Day
						Acres Ribes	Worked Man-Days	
Illinois 1932-1950	Forest Service	1		Initial Working 50				
	Non-Federal Public	2,555	8,636	1,139,265	2,843	0	0.33	401
	Private	804	11,465	367,560	1,041	32.1	0.09	353
	Total	3,360	20,101	1,506,825	3,884	74.8	0.19	386
Indiana 1933-1950	Forest Service	18	179		3	0.0	0.02	
	Non-Federal Public	2,512	18,490	110,879	963	6.0	0.05	115
	Private	7,293	74,457	365,045	3,074	4.9	0.04	119
	Total	9,823	93,126	475,924	4,040	5.1	0.04	118
Iowa 1933-1950	Indian Service	45	500	13,462	169	26.9	0.34	80
	Non-Federal Public	635	4,202	666,506	6,071	158.6	1.44	110
	Private	2,775	34,526	2,926,001	21,141	84.7	0.61	138
	Total	3,455	39,228	3,605,969	27,381	91.9	0.70	132
Ohio 1933-1950	Forest Service	544	4,029	56	13	Tr.	Tr.	4
	Non-Federal Public	4,787	42,608	534,868	8,353	12.6	0.20	64
	Private	11,867	164,795	2,039,744	24,672	12.4	0.15	83
	Total	17,198	211,432	2,574,668	33,038	18.2	0.16	78
Michigan 1928-1950	Forest Service	61,674	170,416	6,088,105	32,053	35.7	0.19	190
	Nat'l Park Service	15	120	13		0.1	-	-
	Non-Federal Public	139,007	419,951	21,058,853	89,621	50.1	0.21	235
	Private	240,258	750,444	38,338,480	159,320	51.1	0.21	241
	Total	440,954	1,340,931	65,485,451	280,994	48.0	0.22	233
Minnesota 1917-1950	Forest Service	44,157	84,064	9,575,495	44,274	113.9	0.53	216
	Indian Service	22,053	34,547	10,560,235	20,296	305.7	0.59	520
	Non-Federal Public	40,843	86,864	10,837,264	39,806	124.8	0.46	272
	Private	70,388	220,090	31,135,063	64,017	141.5	0.29	486
	Total	177,441	425,565	62,008,057	168,393	145.9	0.40	359

(Cont'd.)

Table 8. (Cont'd.) Summary of Local Control by States, Working, and Ownership Classes,
From Inception December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres		Number of Ribes Destroyed	Total 8-Hour Men-Days	Average Per Acre Worked		Average No. Ribes Destroyed Per Man-Day	
		White Pine Protected	Acres Worked			Ribes	Man-Days		
Initial Working (Cont'd.)									
Wisconsin 1920-1950	Forest Service	29,749	69,780	5,071,712	31,519	72.7	0.45	161	
	Indian Service	53,359	97,617	20,860,767	69,816	213.7	0.72	299	
	Non-Federal Public	106,776	317,661	11,709,907	49,573	36.9	0.16	236	
	Private	233,787	887,444	50,402,825	219,345	56.8	0.25	230	
Total		423,671	1,372,502	88,045,213	370,253	61.1	0.27	238	
Region 1917-1950	Forest Service	136,113	328,518	20,735,368	107,632	63.1	0.33	192	
	Indian Service	75,457	132,644	31,434,464	90,281	236.9	0.63	348	
	Nat'l Park Service	15	120	13	-	0.1	-	-	
	Non-Federal Public	297,115	690,412	46,057,542	197,230	51.3	0.22	274	
Private		567,172	2,143,221	125,574,718	492,610	58.6	0.23	255	
Region Total, Initial		1,075,872	3,502,935	223,802,105	887,953	63.9	0.25	252	
Second Working									
Illinois 1936-1950	Non-Federal Public	1,903	7,104	560,537	2,150	79.0	0.30	261	
	Private	390	3,104	52,656	369	17.0	0.12	143	
	Total		2,293	10,208	613,193	2,519	60.1	0.23	243
	Non-Federal Public	1,800	9,111	17,713	232	1.9	0.03	76	
Indiana 1936-1950	Private	2,696	14,968	85,914	889	5.7	0.06	91	
	Total		4,496	24,079	103,627	1,121	4.3	0.05	92
	Indian Service	10	206	3,592	57	17.4	0.28	63	
	Non-Federal Public	383	2,331	380,974	2,457	163.4	1.05	155	
Iowa 1936-1950	Private	715	4,999	330,631	2,817	66.1	0.56	117	
	Total		1,108	7,556	715,197	5,311	64.9	0.71	181
	Non-Federal Public	2,421	20,338	323,083	7,256	15.9	0.36	45	
	Private	4,079	32,002	401,288	5,188	12.5	0.16	77	
Total		6,500	52,340	724,371	12,444	13.6	0.24	58	

(Cont'd.)

Table 8. (Cont'd.) Summary of Local Control by States, Workings, and Ownership Classes,
From Inception to December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres		Number of Ribes Destroyed	Total 8-Hour Men-Days	Average Per Acre		Average No. Ribes Destroyed Per Man-Day
		White Pine Protected	Acres Worked			Ribes	Man-Days	
		Second Working (Cont'd.)						
Michigan 1932-1950	Forest Service	28,333	65,890	1,105,014	10,605	16.8	0.16	104
	Non-Federal Public	50,229	128,533	2,454,666	15,955	19.1	0.12	154
	Private	88,698	251,813	4,708,169	29,165	18.7	0.12	161
	Total	167,260	446,236	8,267,849	55,725	18.5	0.12	163
Minnesota 1933-1950	Forest Service	17,641	28,058	1,498,778	12,678	53.4	0.45	118
	Indian Service	18,669	27,483	2,834,224	13,370	103.1	0.49	212
	Non-Federal Public	14,059	22,877	1,310,548	8,616	57.3	0.38	152
	Private	14,170	46,449	2,727,053	11,711	58.7	0.25	233
Wisconsin 1934-1950	Total	64,739	124,867	8,370,603	46,375	67.0	0.37	180
	Forest Service	27,152	49,289	1,067,575	13,235	21.7	0.27	81
	Indian Service	23,829	44,769	3,631,951	25,191	81.1	0.56	144
	Non-Federal Public	38,986	93,448	1,386,954	11,586	14.9	0.12	120
Region 1932-1950	Private	72,547	249,009	3,596,165	30,844	14.4	0.12	117
	Total	162,814	436,215	9,682,615	80,656	22.2	0.19	120
	Forest Service	73,426	143,237	3,671,367	36,518	25.6	0.25	101
	Indian Service	42,708	72,458	6,469,767	38,618	89.3	0.53	168
Region Total, Second	Non-Federal Public	109,781	283,442	6,434,475	48,252	22.7	0.17	133
	Private	183,295	602,344	11,901,876	80,983	19.8	0.13	147
		409,210	1,101,481	28,477,485	204,371	25.9	0.19	133

(Cont'd.)

Table B. (Cont'd.) Summary of Local Control by State, Workings, and Ownership Classes,
From Inception to December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres White Pine Protected	Acres Worked	Number of Ribes Destroyed	Average No. Ribes Destroyed Per Man-Day		
					Total 8-Hour Man-Days	Average per Acre Worked	Ribes Destroyed Per Man-Day
Third and Subsequent Workings							
Illinois 1940-1950	Non-Federal Public	1,904	7,669	458,360	2,868	59.8	0.37
	Private	946	5,420	108,068	800	19.9	0.15
	Total	2,850	13,089	566,428	3,668	43.3	0.28
Indiana 1941-1950	Non-Federal Public	1,165	6,337	17,338	231	2.7	0.04
	Private	542	5,705	18,125	125	3.2	0.02
	Total	1,707	12,042	35,463	356	2.9	0.03
Iowa 1940-1950	Non-Federal Public	511	1,406	124,909	1,239	88.8	0.88
	Private	41	388	23,218	215	59.8	0.55
	Total	552	1,794	148,127	1,454	82.6	0.81
Ohio 1940-1950	Non-Federal Public	1,821	4,770	9,772	309	2.0	0.06
	Private	1,883	11,374	164,014	2,141	14.4	0.19
	Total	3,504	16,144	173,786	2,450	10.8	0.15
Michigan 1937-1950	Forest Service	14,551	29,061	204,022	3,954	7.0	0.14
	Non-Federal Public	11,940	27,476	303,937	2,835	11.1	0.10
	Private	17,553	50,573	706,140	5,955	14.0	0.12
Minnesota 1937-1950	Forest Service	8,103	13,159	422,788	5,515	32.1	0.12
	Indian Service	13,859	19,822	1,796,133	11,691	90.6	0.59
	Non-Federal Public	4,468	5,814	310,719	2,235	15.7	0.38
Wisconsin 1938-1950	Private	697	1,917	121,664	776	63.5	0.40
	Forest Service	27,127	40,712	2,651,304	20,217	65.1	0.50
	Indian Service	6,459	10,335	293,057	4,189	28.4	0.41
	Non-Federal Public	9,210	16,474	794,717	7,790	48.2	0.47
	Private	8,759	14,528	470,031	4,518	32.4	0.31
	Total	5,252	15,934	124,341	1,048	7.8	0.07
		29,680	57,271	1,682,146	17,545	29.4	0.31

(Cont'd.)

Table 8. (Cont'd.) Summary of Local Control by States, Workings, and Ownership Classes,
From Inception to December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres White Protected	Acres Pine Protected	Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per Acre Worked		Average No. Ribes Destroyed Per Man-Day
							Ribes	Man-Days	
Region 1937-1950	Forest Service	29,113		52,555	919,867	13,658	17.5	0.26	67
	Indian Service	23,069		36,296	2,590,850	19,481	71.4	0.54	133
	Non-Federal Public	30,368		68,000	1,695,066	14,235	24.9	0.21	119
	Private	26,914		91,311	1,265,570	11,060	13.9	0.12	114
	Region Total, Third & Subsequent	109,464		248,162	6,471,353	58,434	26.1	0.24	111
Illinois 1932-1950	Forest Service	1		50					
	Non-Federal Public	6,362		23,409	2,158,162	7,861	92.2	0.34	275
	Private	2,140		19,989	528,284	2,210	26.4	0.11	239
	Total	8,503		43,448	2,686,446	10,071	61.8	0.23	267
	Forest Service	18		179					
Indiana 1933-1950	Non-Federal Public	5,477		33,938	145,930	1,426	4.3	0.04	102
	Private	10,531		95,130	469,084	4,088	4.9	0.04	115
	Total	16,026		129,247	615,014	5,517	4.8	0.04	111
	Indian Service	55		706					
	Non-Federal Public	1,529		7,939	1,172,389	9,767	24.2	0.32	75
Iowa 1933-1950	Private	3,531		39,913	3,279,850	24,173	447.7	1.23	120
	Total	5,115		48,558	4,469,239	34,166	82.2	0.61	136
	Forest Service	514		4,029					
	Non-Federal Public	8,829		67,716	867,723	15,918	Tr.	Tr.	4
	Private	17,829		208,171	2,605,046	32,001	12.8	0.24	55
Ohio 1933-1950	Total	27,172		279,916	3,472,825	47,932	12.5	0.15	81
	Forest Service								
	Non-Federal Public								
	Private								
	Total								

(Cont'd.)

Table 3. (Cont'd.) Summary of Local Control by Status, Workings, and Ownership Classes,
From Inception to December 31, 1950 - North Central Region
Gross Acres

State	Ownership Class	Acres		Number of Ribes Destroyed	Total 8-Hour Man-Days	Average per Acre Worked		Average No. Ribes Destroyed Per Man-Day
		White Pine Protected	Acres Worked			Ribes	Man-Days	
All Workings (Cont'd.)								
Michigan 1928-1950	Forest Service	104,558	265,367	7,397,141	46,612	27.9	0.16	159
	Nat'l Park Service	15	120	13	-	0.1	-	-
	Non-Federal Public	201,176	575,960	23,817,456	108,411	41.4	0.19	220
	Private	346,509	1,052,830	43,752,789	194,440	41.6	0.18	225
	Total	652,258	1,894,277	74,967,399	249,463	39.6	0.18	215
Minnesota 1917-1950	Forest Service	69,901	125,281	11,497,061	62,437	91.8	0.50	184
	Indian Service	54,781	81,852	15,190,592	45,357	185.6	0.55	335
	Non-Federal Public	59,370	115,555	12,458,531	50,657	107.8	0.44	246
	Private	85,255	268,456	33,983,780	76,504	126.6	0.28	444
	Total	269,307	591,144	73,129,964	234,955	123.7	0.40	312
Wisconsin 1920-1950	Forest Service	63,660	129,404	6,432,344	48,943	49.7	0.38	131
	Indian Service	86,398	158,860	25,287,435	102,797	159.2	0.65	246
	Non-Federal Public	154,521	425,337	13,566,892	65,677	31.9	0.15	207
	Private	311,586	1,152,387	54,123,331	251,237	47.0	0.22	215
	Total	616,165	1,865,988	99,410,002	468,654	53.3	0.25	212
Region 1917-1950	Forest Service	279,699	524,710	23,725,502	152,608	42.3	0.30	152
	Indian Service	141,234	241,418	40,495,081	148,380	167.7	0.61	273
	Nat'l Park Service	15	120	13	-	0.1	-	-
	Non-Federal Public	437,264	1,249,854	54,167,083	259,717	43.4	0.21	209
	Private	777,381	2,836,876	138,742,164	584,653	48.9	0.21	237
Region Total, All Workings		1,594,546	4,852,578	258,750,943	1,150,758	53.3	0.24	225

Table 8A. Summary of Ribes Eradication, All Workings by States, Ownership Classes, and Operating Agencies, 1917 to 1950
North Central Region
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average per Acre Worked		Average Number Ribes Destroyed per Man-Day
					Ribes	Man-Days	
<u>Illinois</u>							
Forest Service	Bureau-State	50					
Non-Federal Public	Bureau-State	23,409	2,158,162	7,861	92.2	0.34	275
Private	Bureau-State	19,989	526,284	2,210	26.4	0.11	239
Total, State, Illinois,	All Agencies	43,448	2,686,446	10,071	64.8	0.23	267
<u>Indiana</u>							
Forest Service	Bureau-State	279		3		0.02	
Non-Federal Public	Bureau-State	33,938	345,930	1,426	4.3	0.04	102
Private	Bureau-State	25,130	469,084	4,088	4.9	0.04	115
Total, State, Indiana,	All Agencies	129,247	645,044	5,517	4.8	0.04	111
<u>Iowa</u>							
Indian Service	Indian Service	706	17,054	226	24.2	0.32	75
Non-Federal Public	Bureau-State	7,922	4,172,389	9,767	247.7	1.23	129
Private	Bureau-State	39,913	3,279,850	24,173	82.2	0.61	135
Total, State, Iowa,	All Agencies	48,558	4,469,293	34,166	92.0	0.70	131
<u>Ohio</u>							
Forest Service	Bureau-State	4,029	56	13	Tree	Tree	6
Non-Federal Public	Bureau-State	67,716	867,723	15,918	12.8	0.24	53
Private	Bureau-State	208,171	2,605,046	32,001	12.5	0.15	81
Total, State, Ohio,	All Agencies	279,916	3,472,825	47,932	12.4	0.17	72

(Cont'd.)

Table 8A. (Cont'd.) Summary of Ribes Eradication, All Workings, by States, Ownership Classes, and Operating Agencies, 1917 to 1950
North Central Region
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average per		Average Number Ribes Destroyed per Man-Day
					Ribes	Acres Worked	
Michigan							
Forest Service	Bureau-State	76,590	824,351	3,742	10.8	0.05	220
	Bureau-Intermingled	1,536	85,396	433	55.5	0.28	197
	Forest Service	187,239	6,487,394	42,437	34.6	0.23	153
	Sub-Total	265,365	7,397,141	46,612	27.9	0.18	159
National Park Service	Bureau-State	120	13	-	0.1	-	-
Non-Federal Public	Bureau-State	275,960	23,817,456	103,411	42.4	0.19	220
Private	Bureau-State	1,030,143	43,506,770	192,891	42.2	0.19	226
	Bureau-Intermingled	21,842	238,517	1,524	10.9	0.07	157
	Forest Service	845	7,502	25	8.9	0.03	300
	Sub-Total	1,052,830	43,752,789	194,440	41.6	0.18	225
Total, State, Michigan	All Agencies	1,894,277	74,967,399	349,463	39.6	0.18	215
Minnesota							
Forest Service	Bureau-State	20,955	2,415,503	7,125	115.8	0.34	399
	Forest Service	104,426	9,081,558	55,312	87.0	0.53	164
	Sub-Total	125,381	11,497,061	62,437	91.8	0.50	183
Indian Service	Bureau-State	3,289	349,469	1,179	106.3	0.36	296
	Indian Service	78,563	14,841,123	44,178	185.9	0.56	336
	Sub-Total	81,852	15,190,592	45,357	185.6	0.55	335
Non-Federal Public	Bureau-State	113,868	12,271,010	48,416	107.8	0.43	253
	Bureau-Intermingled	1,687	187,491	2,241	111.1	1.33	84
	Sub-Total	115,555	12,458,501	50,657	107.8	0.44	246
Private	Bureau-State	268,456	13,983,780	76,594	126.6	0.28	114
Total, State, Minnesota	All Agencies	591,144	73,129,964	234,959	123.7	0.40	311

(Cont'd.)

Table 8A. (Cont'd.) Summary of Ribes Eradication, All Workings by States, Ownership Classes, and Operating Agencies, 1917 to 1950
North Central Region
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average per Acre Worked		Average Number Ribes Destroyed per Man-Day
					Ribes	Man-Days	
Forest Service	Bureau-State	19,556	505,953	2,994	25.7	0.15	168
	Bureau-Intermingled	9,726	169,426	2,327	17.4	0.24	73
	Forest Service	100,122	5,759,365	43,622	57.5	0.44	132
	Sub-Total	129,404	6,432,344	48,943	49.7	0.38	131
	Indian Service	158,860	25,287,135	102,797	159.8	0.65	246
Indian Service Non-Federal Public	Bureau-State	424,580	13,553,747	65,475	31.9	0.15	207
	Bureau Intermingled	757	13,145	202	17.4	0.27	65
	Sub-Total	425,337	13,566,892	65,677	31.9	0.15	207
	Bureau-State	1,151,585	54,107,786	251,016	47.6	0.22	216
	Bureau-Intermingled	802	15,545	221	19.4	0.28	70
Private	Sub-Total	1,152,387	54,123,331	251,237	47.0	0.22	215
	Total, State, Wisconsin, All Agencies	1,865,988	99,410,002	463,654	53.3	0.25	212
Forest Service	Bureau-State	121,259	3,743,463	13,877	30.9	0.11	270
	Bureau-Intermingled	11,264	254,822	2,760	22.6	0.25	92
	Forest Service	391,787	21,328,317	141,371	54.4	0.36	151
	Sub-Total	524,310	25,326,602	158,008	48.3	0.30	160
	Indian Service	3,289	349,469	1,179	106.3	0.36	296
Indian Service	Indian Service	238,129	40,145,612	147,201	168.6	0.62	273
	Sub-Total	241,418	40,495,081	148,380	167.7	0.61	273
	National Park Service	120	13	-	0.1	-	-
	Bureau-State	120	13	-	0.1	-	-
	Sub-Total	120	13	-	0.1	-	-

(Cont'd.)

Table 8A. (Cont'd.) Summary of Ribes Eradication, All Workings, by States, Ownership Classes and Operating Agencies, 1917 to 1950
North Central Region
Gross Acres

Ownership Class	Operating Agency	Gross Acres Worked	Number of Ribes Destroyed	Total 8-Hour Man-Days Used	Average per		Average Number Ribes Destroyed per Man-Day
					Ribes	Acre Worked	
Region (Cont'd.)							
Non-Federal Public	Bureau-State	1,247,410	53,986,447	257,274	43.3	0.21	210
	Bureau-Intermingled	2,444	200,636	2,443	92.1	1.00	92
Private	Sub-Total	1,249,854	54,187,083	259,717	43.4	0.21	200
	Bureau-State	2,813,387	138,486,600	582,883	49.2	0.21	236
	Bureau-Intermingled	22,644	24,062	1,745	11.2	0.08	146
	Forest Service	845	7,502	25	8.9	0.03	300
	Sub-Total	2,836,876	138,742,164	584,653	48.9	0.21	237
Grand Total, Region, All Agencies		4,852,578	258,750,943	1,150,759	53.3	0.24	225
All Ownerships	Bureau-State	4,185,465	196,559,992	855,213	47.0	0.20	230
	Bureau-Intermingled	36,352	709,520	6,948	19.5	0.19	102
	Forest Service	392,632	21,335,819	141,396	54.3	0.36	151
	Indian Service	238,129	40,145,612	147,201	168.6	0.62	169
All Ownerships		4,852,578	258,750,943	1,150,759	53.3	0.24	225

Table 9. Summary of Nursery Sanitation Performed during 1950
North Central Region

Name and Ownership of Nursery	Operating Agency	Working	White Pine		Acres Protected	Acres Worked	Ribes Destroyed		Man- Days Used
			Trees in Nursery	Pine			All	Wild	
Jasper Pulaski State Nursery	Bureau-State	Third	Indiana		50	400	=		2
			2,071,700						
State Forest Nursery	Bureau-State	Fifth	Iowa		80	550	629		9
			40,000						
Beal, Michigan State College	Bureau-State	First	Michigan		25	220	487		6
			50,000						
Gordon, State	Bureau-State	Ninth	Wisconsin		10	373	40		17
Hayward, State	Bureau-State	Eighth	1,541,000		45	502	439		44
Trout Lake, State	Bureau-State	Eleventh	2,899,000		18	269	219		15
Nepco, 5-Mile, Private	Bureau-State	First	1,200,000		30	127	23,113		147
			1,000,000						
Sub-Total, Wisconsin			6,640,000		103	1,271	23,811		223
Grand Total			8,801,700		258	2,641	24,927		239

Table 10. Cultivated Black Current Elimination during 1950
North Central Region

E O M E

Table 11. Cumulative Cultivated Black Current Elimination to December 31, 1950
North Central Region

State	Number of Inspections	F o u n d		D e s t r o y e d		Total Men-Days Used	Plantings Found per 1,000 Inspections
		Plantings	Plants	Plantings	Plants		
Illinois	48,067	532	4,171	60	761	*	11.1
Indiana	64,226	5	20	3	15	*	0.2
Iowa	318,600	1,611	7,331	1,606	7,310	6,531	5.1
Ohio	1,845,970	8,838	75,605	8,406	73,117	25,791	4.8
Michigan	981,715	14,931	147,849	14,864	147,195	40,139	15.2
Minnesota	211,664	3,261	23,309	3,261	23,309	12,031	15.4
Wisconsin	922,898	6,601	37,080	6,597	37,051	32,137	7.2
Region Total	4,399,140	35,772	235,065	34,197	266,752	116,599	6.3

* Work done in connection with other field activities.

Table 12. Federal Expenditures, Milwaukee Regional Office
Calendar Year 1950

Appropriation	Expenditure Class	Leadership and Coordination	Field Data	T o t a l
W-a. 14 January to June	Salaries	\$ 15,310.05	\$ 1,000.00	\$ 16,310.05
	Non-Salaries	1,194.87	300.00	1,494.87
	T o t a l	\$ 16,504.92	\$ 1,300.00	\$ 17,804.92
W-a. 14 July to December	Salaries	14,194.04	1,000.00	15,194.04
	Non-Salaries	775.68	200.00	975.68
	T o t a l	\$ 14,969.72	\$ 1,200.00	\$ 16,169.72
T o t a l	Salaries	29,504.09	2,000.00	31,504.09
	Non-Salaries	1,970.55	500.00	2,470.55
G r a n d T o t a l		\$ 31,474.64	\$ 2,500.00	\$ 33,974.64

Table 12 4. North Central Regional Expenditure, by States and Appropriations, Calendar Year, 1950

Appropriation	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Milwaukee Office	Total Region
State Indirect Aid									
January to June	\$ 210.00	\$ 300.00	\$ 450.00	\$ 432.00	\$ 675.00	\$ 1,300.00	\$ 3,820.00	-	\$ 7,187.00
State Indirect Aid									
July to December	210.00	300.00	450.00	432.00	675.00	1,400.00	3,780.00	-	7,247.00
State Direct Aid									
January to June	2,686.86	2,676.09	868.96	138.00	6,561.52	4,494.64	9,182.02	-	26,608.09
State Direct Aid									
July to December	2,514.56	3,321.42	1,417.64	291.36	14,331.75	8,732.71	23,710.18	-	54,319.62
Sub-Total, State	\$5,621.42	\$6,597.51	\$3,186.60	\$1,293.36	\$22,243.27	\$15,927.35	\$40,492.20	-	\$95,361.71
Bureau W-a. 14									
January to June	720.00	1,440.00	751.74	1,979.21	9,682.12	10,789.67	9,762.87	\$17,804.92	52,930.53
Bureau W-a. 14									
July to December	625.88	1,251.76	625.88	1,608.42	7,680.39	9,312.01	8,557.60	16,169.72	45,831.66
Bureau W-o. 14									
January to June	103.06	733.86	2,336.99	2,130.99	4,657.77	4,073.24(a)	6,949.08	-	20,984.99
Bureau W-o. 14									
July to December	330.05	920.05	1,378.78	1,603.94	3,189.56	3,608.46	4,101.67	-	15,132.51
Forest Service 74									
January to June	-	-	-	-	10,650.48	29,458.60	8,032.87	-	48,541.93
Forest Service 74									
July to December	-	-	-	-	6,907.86	43,363.75	7,404.73	-	57,676.34
Indian Service 77									
January to June	-	-	-	-	-	7,193.77	13,354.69	-	20,548.46
Indian Service 77									
July to December	-	-	-	-	-	7,123.20	13,430.77	-	20,553.97
Indian Service Tribal									
January to June	-	-	-	-	-	-	3,512.23	-	3,512.23
Indian Service Tribal									
July to December	-	-	-	-	-	-	3,791.80	-	3,791.80
Sub-Total, Federal	\$1,778.99	\$4,245.61	\$5,093.39	\$7,322.56	\$42,968.18	\$114,922.70	\$78,898.31	\$33,974.64	\$289,304.14
Sub-Total, All Funds									
January to June	\$3,719.92	\$5,149.25	\$4,407.69	\$4,680.20	\$32,426.89	\$77,309.92	\$54,613.76	\$17,804.92	\$113,25
Sub-Total, All Funds									
July to December	\$3,680.49	\$5,793.23	\$3,872.30	\$3,935.72	\$32,784.56	\$72,549.13	\$64,776.75	\$16,169.72	\$220,552.90
Grand Total	\$7,400.41	\$10,943.18	\$8,279.99	\$8,615.92	\$65,211.45	\$130,850.05	\$119,390.51	\$33,974.64	\$384,666.15
Percent of Total	1.9%	2.8%	2.2%	2.3%	17.0%	34.0%	31.0%	8.8%	100.0%

(a) Includes \$56.58 of Fiscal Year 1949 Funds for purchase of 1 Copy of Blister Rust Control Film.

Table 12 B. North Central Region Expenditures, Exclusive of Milwaukee Office,
Classified by State and Activity, Calendar Year 1950

Activity	Illinois	Indiana	Iowa	Ohio	Michigan	Minnesota	Wisconsin	Region	Percent Each Activity
Leadership and Coordination	\$3,561.21	\$5,451.37	\$1,945.87	\$3,657.36	\$11,194.30	\$16,268.05	\$17,880.29	\$59,958.45	17.1
Local Control	1,689.39	4,039.56	5,617.22(a)	2,405.36	42,932.94	22,697.34	86,469.98(b)	225,851.79	64.4
Nursery Sanitation	-	-	486.05	100.00	84.00	300.00	2,055.79	3,025.84	0.9
Canker Pruning	-	-	80.85	-	-	3,480.18	2,449.87	6,010.90	1.7
Surveys	410.78	1,452.25	-	2,356.00	6,639.43	12,282.66	4,734.58	27,875.70	7.9
Other Field Data	1,739.03	-	150.00	97.20	4,360.78	15,821.82	5,800.00	27,968.83	8.0
All Activities	\$7,400.41	\$10,945.18	\$8,279.99(a)	\$6,615.92	\$65,211.45	\$138,850.69	\$119,890.54(b)	\$550,691.51	100.0

(a) Includes \$1.60 as value of cultivated ribes destroyed.

(b) Includes \$49.00 as value of cultivated ribes destroyed.

Table 12 C. North Central Region Expenditures, Exclusive of Milwaukee Office,
Classified by Appropriation and Activity, Calendar Year 1950

Source of Funds	Expenditure Class	Leadership and Coordination		Local Control	Nursery Sanitation	Canker Pruning	Surveys	Other Field Data	Total	Percent Each Source of Funds
State Indirect Aid	Salaries	\$ 7,934.00	-	-	\$ 625.00	-	-	\$ 3,600.00	\$ 12,159.00	
	Non-Salaries	-	-	-	75.00	-	-	2,200.00	2,275.00	
Total		\$ 7,934.00			\$ 700.00			\$ 5,800.00	\$ 14,434.00	4.2
State Direct Aid	Salaries	7,909.59	\$ 49,493.20		1,945.58	\$ 417.00	\$ 2,230.17	2,773.83	64,769.37	
	Non-Salaries	6,052.15	6,915.34		125.00	75.38	1,159.51	1,830.96	16,158.34	
Total		\$ 13,961.74	\$ 56,408.54		\$ 2,070.58	\$ 492.38	\$ 3,389.68	\$ 4,604.79	\$ 80,927.71	23.2
Bureau W-a. 14	Salaries	35,686.53	11,821.70		-	482.40	5,601.21	8,152.25	61,744.09	
	Non-Salaries	1,379.09	706.22		-	26.95	626.90	304.30	3,043.46	
Total		\$ 37,065.62	\$ 12,527.92			\$ 509.35	\$ 6,228.11	\$ 8,456.55	\$ 64,787.55	18.5
Bureau W-e. 14	Salaries	727.54	16,948.61		202.86	65.35	3,742.59	1,782.30	23,449.25	
	Non-Salaries	269.55	8,865.62		52.40	100.13	2,339.81	1,040.74	12,668.25	
Total		\$ 997.09	\$ 25,814.23		\$ 255.26	\$ 165.48	\$ 6,082.40	\$ 2,823.04	\$ 36,117.50	10.3
Forest Service	Salaries	-	77,757.82		-	1,410.27	9,999.45	2,235.80	91,403.34	
	Non-Salaries	-	13,843.80		-	26.75	425.00	319.40	14,614.95	
Total			\$ 91,601.62			\$ 1,437.02	\$ 10,424.45	\$ 2,555.20	\$ 106,018.29	30.2
Indian Service and Tribal	Salaries	-	36,267.75		-	2,954.88	1,471.21	3,076.82	43,770.46	
	Non-Salaries	-	3,231.75		-	451.79	279.85	672.63	4,636.00	
Total			\$ 39,499.48			\$ 3,406.67	\$ 1,751.06	\$ 3,749.45	\$ 48,406.46	13.8
All Funds	Salaries	52,257.66	192,289.08		2,773.44	5,329.90	23,044.63	21,600.80	297,295.51	
	Non-Salaries	7,700.79	33,562.71		252.40	681.00	4,831.07	6,368.03	53,396.00	
Grand Total		\$ 59,958.45	\$ 225,851.79		\$ 3,025.84	\$ 6,010.90	\$ 27,875.70	\$ 27,968.83	\$ 350,691.51	100.0

Table 13. Approximate Number of Persons Employed by Months and Agencies,
North Central Region, Calendar Year 1950

Operating Agency	Number of Persons by Months												Average per Month
	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	
Illinois													
State & Private	1.0	1.0	1.0	1.0	1.5	1.5	2.0	2.0	1.0	1.0	1.0	1.0	15.0
Bureau W-e.M.	-	-	-	-	-	0.5	1.0	1.0	-	-	-	-	2.5
Total	1.0	1.0	1.0	1.0	1.5	2.0	3.0	3.0	1.0	1.0	1.0	1.0	17.5
Indiana													
State & Private	1.0	1.0	1.0	1.0	2.1	3.0	3.2	4.0	3.7	1.5	1.0	1.0	23.5
Bureau W-e.M.	-	-	-	-	0.3	1.0	1.0	1.0	0.5	0.5	-	-	4.3
Total	1.0	1.0	1.0	1.0	2.4	4.0	4.2	5.0	4.2	2.0	1.0	1.0	27.8
Iowa													
State & Private	-	-	-	-	0.5	4.0	4.0	3.5	0.5	0.5	-	-	13.0
Bureau W-e.M.	1.0	1.0	1.0	1.0	1.5	2.0	1.5	1.5	1.0	-	0.7	0.7	12.2
Total	1.0	1.0	1.0	1.0	2.0	6.0	5.5	5.0	1.5	0.5	-	0.7	25.2
* Hayes assigned to Barbary Eradication, October 1 to December 9, 1950.													
Ohio													
State & Private	-	0.1	-	0.2	-	-	-	1.1	-	0.2	-	-	1.6
Bureau W-a.M.	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	1.0	0.3	21.3
Bureau W-e.M.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Total	3.0	3.1	3.0	3.2	3.0	3.0	3.0	4.1	3.0	3.2	2.0	1.3	34.9
Michigan													
State & Private	2.0	2.0	2.0	2.0	12.0	17.0	26.0	43.0	29.0	5.0	2.0	2.0	144.0
Bureau W-a.M.	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	3.0	3.0	3.0	3.0	44.0
Bureau W-e.M.	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	12.0
Forest Service	-	-	-	-	1.0	43.0	31.0	39.0	-	-	-	-	114.0
Total	7.0	7.0	7.0	7.0	18.0	65.0	68.0	87.0	33.0	9.0	6.0	6.0	200.0

(Cont'd.)

Table 14. Current and Cumulative Summary of Canker Pruning,
from Beginning to December 31, 1950. North Central Region

State	Years Worked	Number of Areas Treated	Number of Trees Examined	Number of Trees Treated	Number of Trees Removed	Number of Cankers Removed	Number Man-Days Used
Indiana	1947-1949	4	973	8		11	1
	1945-1949 1950	45 9	40,557 5,380	673 50	711 23	1,869 82	52 5
Iowa	1945-1950	24	45,937	723	724	1,931	5
Ohio	1941-1947	5	1,306	14	13	126	15
Michigan	1933-1949	348	779,565	41,694	237	102,176	2,221
	1933-1949 1950	176 8	372,099 81,415	39,653 6,389	2,609 3,825	71,318 8,622	1,714 308
Minnesota	1937-1950	184	453,514	16,042	6,434	79,940	2,082
	1948 1950	1 6	11,523 254,035	561 19,044	0 4,211	1,102 25,297	10 342
Wisconsin	1948-1950	7	265,558	19,575	4,211	25,399	382
	1933-1949 1950	579 23	1,206,023 340,630	82,630 25,453	3,630 6,059	176,602 34,001	5,083 655
Region Total	1937-1950	602	1,546,853	108,683	11,609	219,603	5,738

TABLE 1 - SHEET 1

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES - 1950

NORTH CENTRAL REGION

State	Operating Agency	First Working				Second Working				Other Working			
		Without		With		Destroyed		Man-		Destroyed		Man-	
		Ribes Acres	Ribes Acres	Total Acres	Ribes Acres	Ribes Acres	Days	Ribes Acres	Days	Ribes Acres	Days	Ribes Acres	Days
Illinois	Bureau-State	-	95	95	1,722	5	10	1,127	4	427	19,374	17	
Indiana	Bureau-State	-	3,059	3,059	30,137	101	2,409	11,189	77	3,213	10,490	3	
Iowa	Bureau-State	-	254	254	40,834	176	128	29,474	114	214	21,062	1	
Ohio	Bureau-State	278	1,381	1,659	4,302	31	1,941	187	11	1,024	3,655	1	
Michigan	Bureau-State	-	7,978	7,978	13,215	194	17,310	80,063	820	6,784	55,366	1	
	Forest Service	-	3,140	3,140	55,251	449	940	5,186	39	2,320	18,893	1	
	Total	-	11,118	11,118	69,465	643	18,280	85,219	859	9,104	74,259	1	
Minnesota	Bureau-State	-	553	553	38,437	336	1,061	40,166	462	547	15,578	1	
	Forest Service	-	264	264	35,016	387	1,176	30,144	547	1,414	49,032	1	
	Indian Service	-	-	-	-	-	715	61,612	561	330	25,716	1	
	Total	-	817	817	73,453	723	2,952	132,122	1,570	2,291	90,489	1	
Wisconsin	Bureau-State	-	36,839	36,839	284,710	1,009	19,874	56,546	602	2,346	86,380	1	
	Forest Service	-	475	475	125,731	444	975	35,186	307	1,802	39,281	1	
	Indian Service	-	3,595	3,595	17,521	427	5,176	86,784	2,354	2,248	60,369	1	
	Total	-	40,909	40,909	427,962	2,536	25,825	178,516	3,263	6,396	186,034	1	
ALL States	Bureau-State	278	49,959	50,237	419,667	2,508	42,563	219,082	2,090	14,555	211,815	1	
	Forest Service	-	3,879	3,879	215,998	1,280	3,091	70,516	893	5,536	107,206	1	
	Indian Service	-	3,595	3,595	17,521	427	5,891	148,596	2,915	2,578	86,085	1	
	Total	278	57,433	57,711	653,186	4,215	51,545	438,174	5,898	22,669	405,106	1	

TABLE 1 - SHEET 2

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES - 1950

NORTH CENTRAL REGION										
A L L W O R K I N G S										
State	Operating Agency	Without Ribes Acres		Total Acres	Destroyed Ribes	Man-Days	Per Acre		Number of Camps	Total Seasonal Employees
		Ribes Acres					Ribes	Man-Days		
Illinois	Bureau-State	-	522	522	22,223	245	42.6	0.28	-	10
Indiana	Bureau-State	-	8,681	8,681	58,026	263	6.7	0.03	-	1
Iowa	Bureau-State	-	596	596	91,370	425	153.3	0.71	-	6
Ohio	Bureau-State	278	4,356	4,634	8,464	71	1.8	0.02	-	5
Michigan	Bureau-State	-	32,102	32,102	148,644	2,014	4.6	0.06	-	10
	Forest Service	-	6,400	6,400	79,330	947	12.4	0.15	-	4
Minnesota	Total	-	38,502	38,502	227,974	2,961	5.9	0.08	-	32
	Bureau-State	-	2,161	2,161	94,181	985	43.6	0.46	-	39
	Forest Service	-	2,854	2,854	144,192	2,316	40.0	0.81	2	104
	Indian Service	-	1,045	1,045	87,528	872	83.8	0.83	-	39
Missouri	Total	-	6,060	6,060	295,901	4,173	48.8	0.69	2	173
	Bureau-State	-	58,659	58,659	427,636	3,216	7.3	0.05	-	71
	Forest Service	-	3,252	3,252	200,198	1,404	61.6	0.43	-	72
	Indian Service	-	11,019	11,019	164,674	3,988	14.9	0.36	-	53
All States	Total	-	72,930	72,930	792,508	8,608	10.9	0.12	-	200
	Bureau-State	278	107,677	107,955	850,544	7,119	7.9	0.07	-	174
	Forest Service	-	12,506	12,506	393,720	4,667	31.5	0.37	2	208
	Indian Service	-	12,064	12,064	252,202	4,860	20.9	0.40	-	83
GRAND TOTAL		278	131,647	131,925	1,496,466	16,646	11.3	0.13	2	430

* - Use Peak Season Employment

TABLE 1 - SHEET 3

SUMMARY OF RIBES ERADICATION BY FOREST SERVICE - 1950

National Forests	NORTH CENTRAL REGION									
	First Working									
	Without Ribes Acres		With Ribes Acres		Total Acres		Destroyed Ribes		Man-Days	
Euron, Michigan	-	-	1,405	1,947	30	-	-	-	-	-
Manistee, Michigan	-	-	685	2,357	16	715	3,241	13	-	-
Marquette, Michigan	-	-	-	-	-	-	-	-	-	-
Mearns, Michigan	-	-	480	22,318	132	225	1,945	26	1,559	-
Ontonagon, Michigan	-	-	570	28,629	271	-	-	-	17,024	157
Superior, Minnesota	-	-	197	27,969	317	276	17,674	328	11,394	1,202
Chippewa, Minnesota	-	-	67	7,027	70	900	12,470	219	7,628	341
Chequamegon, Wisconsin	-	-	475	125,731	444	975	35,186	307	9,172	-
Micolet, Wisconsin	-	-	-	-	-	-	-	-	1,690	30,109
Total	-	-	3,879	215,998	1,280	3,091	10,546	1,046	97,206	2,454

Total

TABLE 1 - SHEET 4

SUMMARY OF RIBES ERADICATION BY FOREST SERVICE - 1950

National Forests	NORTH CENTRAL REGION									
	ALL WORKINGS									
	Without Ribes Acres	With Ribes Acres	Total Acres	Destroyed Ribes	Man- Days	Per Acre		Number of Camps	Total Seasonal Employees	
						Ribes	Man- Days			
Huron, Michigan	-	1,405	1,405	1,947	30	1.4	0.02	-	-	1
Manistee, Michigan	-	1,400	1,400	5,598	29	4.0	0.02	-	-	1
Marquette, Michigan	-	-	-	-	-	-	-	-	-	-
Hiawatha, Michigan	-	1,155	1,155	26,122	178	22.6	0.15	-	-	11
Ottawa, Michigan	-	2,440	2,440	45,663	710	18.7	0.29	-	-	30
Superior, Minnesota	-	1,727	1,727	87,057	1,906	50.4	1.10	2	75	
Chippewa, Minnesota	-	1,127	1,127	27,135	410	24.1	0.36	-	-	33
Chequamegon, Wisconsin	-	1,562	1,562	170,089	813	108.9	0.52	-	-	41
Nicolet, Wisconsin	-	1,690	1,690	30,109	591	17.8	0.35	-	-	31
Total	-	12,506	12,506	393,720	4,667	31.5	0.37	2	22	

* Use peak season employment

SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE - 1950

NORTH CENTRAL REGION												
First Working												
Indian Lands	Without Ribes		Ribes Acres	Total Acres	Destroyed Ribes	Man-Days	Second Working			Other Workings		
	Acres	Ribes					Acres	Destroyed Ribes	Man-Days	Acres	Destroyed Ribes	Man-Days
Grand Portage, Minnesota	-	-	-	-	-	-	184	46,904	323	144	7,869	-
Hett Lake, Minnesota	-	-	-	-	-	-	-	-	-	110	17,727	231
Red Lake, Minnesota	-	-	-	-	-	-	531	14,908	238	176	120	18
Bad River, Wisconsin	-	-	104	104	-	-	114	15,729	125	1,290	45,976	660
Lac Court Oreilles, Wisconsin	-	-	570	570	1,478	35	3,000	40,361	1,040	538	417	70
Lac du Flambeau, Wisconsin	-	-	2,016	2,016	4,641	88	482	1,563	30	-	-	-
Menominee, Wisconsin	-	-	905	905	11,402	304	1,580	29,131	1,159	424	13,976	47
Total	-	-	3,595	3,595	27,521	424	5,891	118,596	2,915	2,578	86,085	1,518

TABLE 1 - SHEET 8

SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE - 1950

NORTH CENTRAL REGION									
Indian Lands	All Workings								
	Without Ribes		Total Acres	Destroyed Ribes	Man-Days	Per Acre		Number of Camps	Total * Seasonal Employees
	Ribes Acres	Ribes Acres				Ribes	Man-Days		
Grand Portage, Minnesota	-	228	228	54,773	385	240.2	1.69	-	13
Nett Lake, Minnesota	-	110	110	17,727	231	161.2	2.10	-	5
Red Lake, Minnesota	-	707	707	15,028	256	21.3	0.36	-	12
Bad River, Wisconsin	-	1,508	1,508	61,705	785	40.9	0.52	-	6
Lac Court Oreilles, Wisconsin	-	4,108	4,108	42,256	1,145	10.3	0.28	-	15
Lac du Flambeau, Wisconsin	-	2,498	2,498	6,204	118	2.5	0.05	-	5
Menominee, Wisconsin	-	2,905	2,905	54,509	1,240	18.8	0.67	-	27
Total	-	12,064	12,064	252,202	4,860	20.9	0.40	-	83

* Use peak season employment

TABLE 2 - SHEET 1

ACREAGE WORKED ON NATIONAL FOREST LANDS - 1950

National Forests	NORTH CENTRAL REGION					
	Forest Workings					
	Without Ribes Acres	With Ribes Acres	Total Acres	Second Working Acres	Other Workings Acres	All Workings Acres
Huron, Michigan	-	1,490	1,490	-	-	1,490
Manistee, Michigan	-	1,785	1,785	955	120	2,860
Marquette, Michigan	-	-	-	-	-	-
Hiawatha, Michigan	-	480	480	225	450	1,155
Ottawa, Michigan	-	810	810	-	1,870	2,680
Superior, Minnesota	-	197	197	276	1,254	1,727
Chippewa, Minnesota	-	67	67	900	160	1,127
Chequamegon, Wisconsin	-	475	475	975	112	1,562
Micolet, Wisconsin	-	-	-	-	1,690	1,690
Total	-	5,304	5,304	3,331	5,656	14,291

TABLE 2 - SHEET 3

ACREAGE WORKED ON INDIAN LANDS - 1950

NORTH CENTRAL REGION

First Working

Indian Lands	Without		With		Total Acres	Second Working Acres	Other Workings Acres	All Workings Acres
	Ribes Acres		Ribes Acres					
Grand Portage, Minnesota	-		-		-	184	44	228
Nett Lake, Minnesota	-		-		-	-	110	110
Red Lake, Minnesota	-		-		-	531	176	707
Bad River, Wisconsin	-		104		104	114	1,290	1,508
Lac Court Oreilles, Wisconsin	-		570		570	3,000	538	4,108
Lac du Flambeau, Wisconsin	-		2,016		2,016	482	-	2,498
Menominee, Wisconsin	-		905		905	1,580	420	2,905
Total	-		3,595		3,595	5,891	2,578	12,064

Calendar Year Series

TABLE 2 - SHEET 5

ACREAGE WORKED ON STATE AND PRIVATE LANDS - 1950

NORTH CENTRAL REGION

State & Private Lands

State & Private Lands	Without		With		Total Acres	Second Working Acres	Other Workings Acres	All Workings Acres
	Ribes Acres		Ribes Acres					
Illinois	-		95		95	10	417	522
Indiana	-		3,059		3,059	2,409	3,213	8,681
Iowa	-		254		254	128	214	596
Ohio	278		1,381		1,659	1,941	1,034	4,634
Michigan	-		6,553		6,553	17,100	6,664	30,317
Minnesota	-		553		553	1,061	547	2,161
Wisconsin	-		36,639		36,639	19,674	2,346	58,659
Total	278		40,534		40,812	42,323	14,455	105,570

TABLE 2 - SHEET 6

ACREAGE WORKED BY LAND OWNERSHIP - 1950

NORTH CENTRAL REGION					
Land Ownership	Forest Workings			All	
	Without Ribes Acres	With Ribes Acres	Total Acres	Second Working Acres	Other Workings Acres
National Forest	-	5,304	5,304	3,331	5,656
Indian Service	-	3,595	3,595	5,891	2,578
Total - Federal	-	8,899	8,899	9,222	8,234
State and Private	278	48,534	48,812	12,323	14,435
Grand Total	278	57,433	57,711	51,545	22,669

Calendar Year Series

TABLE 3

SUMMARY OF FIELD WORK OTHER THAN RIBES ERADICATION BY STATES AND OPERATING AGENCIES - 1950

NORTH CENTRAL REGION									
State	Operating Agency	Ribes Nigrum		Nursery Sanitation			Treatment of		
		Destroyed Ribes	Man- Days	Number Nurseries	White Pine	Worked Acres	Destroyed Ribes	Man- Days	Diseased Pine Treated Pines
Illinois	Bureau-State	-	-	-	-	-	-	-	-
Indiana	Bureau-State	-	-	1	2,071,700	400	-	1	-
Iowa	Bureau-State	-	-	1	40,000	550	629	9	50
Ohio	Bureau-State	-	-	-	-	-	-	-	-
Michigan	Bureau-State	-	-	1	50,000	220	1,187	6	-
Minnesota	Bureau-State	-	-	-	-	-	-	-	-
Indian Service	Indian Service	-	-	-	-	-	-	-	1,267
Total	Total	-	-	-	-	-	-	-	5,122
Wisconsin	Bureau-State	-	-	4	6,610,000	1,271	23,811	223	6,389
Forest Service	Forest Service	-	-	-	-	-	-	-	9,510
Indian Service	Indian Service	-	-	-	-	-	-	-	9,504
Total	Total	-	-	4	6,610,000	1,271	23,811	223	19,014
All States	Bureau-State	-	-	7	8,801,700	2,441	24,927	239	1,317
Forest Service	Forest Service	-	-	-	-	-	-	-	9,510
Indian Service	Indian Service	-	-	-	-	-	-	-	14,626
Grand Total	Grand Total	-	-	7	8,801,700	2,441	24,927	239	25,453

TABLE A

Accumulative Series - 1950

STATUS OF RIBES ERADICATION BY STATES - ALL OWNERSHIPS, DECEMBER 31, 1950

NORTH CENTRAL REGION

State	Total Acres		First Working		Second Working		Other Workings		On Maintenance		Remaining Work	
	White Pine	Control Area (W.P. & Prot. Zone)	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Unworked Acres	Required work Acres (Col. 4-8)
Illinois	1,986	13,429	11,218	83.5	10,208		13,089		1,925	14.3	2,211	9,209
Indiana	10,245	91,889	78,732	85.7	24,079		12,042		61,504	66.9	13,157	17,250
Iowa	5,935	50,501	34,557	68.4	7,536		1,794		18,851	37.3	15,944	15,700
Ohio	21,141	213,374	178,498	83.7	52,340		16,144		87,898	41.2	34,876	90,400
Michigan	395,967	1,184,887	1,074,944	90.7	446,236		107,110		487,544	41.1	109,943	537,600
Minnesota	238,572	541,130	366,929	67.8	124,867		40,712		115,321	21.3	174,201	251,600
Wisconsin	455,552	1,477,354	1,243,158	84.1	436,215		57,271		616,269	41.7	234,196	626,400
Total	1,129,390	3,572,564	2,938,036	83.6	1,101,481		248,162		1,389,312	38.9	504,520	1,098,700

TABLE B - SHEET 1

Accumulative Series - 1950

STATUS OF RIBES ERADICATION ON NATIONAL FOREST LANDS, DECEMBER 31, 1950

NORTH CENTRAL REGION

National Forests

National Forests	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Acres	Per-cent	Unworked Acres	Required work Acres (Col. 4-8)
Hoosier, Ind.	18		179	100.0	-		-		179	100.0	-	-
Wayne, Ohio	515		4,029	100.0	-		-		4,029	100.0	-	-
Huron, Mich.	2,466		7,794	99.6	2,138		128		6,039	77.2	30	1,350
Manistee, Mich.	24,061		74,360	100.0	15,689		5,578		71,195	95.7	-	3,160
Marquette, Mich.	11,639		25,710	100.0	14,035		8,400		13,395	52.1	-	12,315
Riawatha, Mich.	13,508		34,942	96.4	16,706		4,040		18,951	52.3	-	15,200
Ottawa, Mich.	11,410		22,553	100.0	17,322		10,915		9,410	41.7	1,320	13,100
Superior, Minn.	64,159		33,861	34.5	16,817		10,782		44,609	14.9	64,193	19,200
Chippewa, Minn.	13,163		22,008	83.2	11,241		2,377		15,856	59.9	4,444	6,152
Chequamegon, Wis.	21,080		34,462	96.0	30,588		5,355		19,499	54.3	1,425	14,943
Micolet, Wis.	12,029		23,116	98.8	18,701		4,980		10,960	46.8	285	12,100
Total	174,063	350,713	298,014	79.3	141,297		52,575		101,122	50.9	71,889	98,500

TABLE B - SHEET 2

Accumulative Series - NET

STATUS OF RIBES ERADICATION ON NATIONAL PARK LANDS, DECEMBER 31, 1950

NORTH CENTRAL REGION

National Park Lands	Total Acres White	Control Area (W.P. & Prot. Zone)	First Working		Second Working		Other Workings		Maintenance		Remaining Work	
			Acres	Per- cent	Acres	Per- cent	Acres		Acres	Per- cent	Unworked Acres	Requiring Rework (Col. 4-8)
Isle Royale, Mich.	179	1,530	120	7.8	-	-	-	-	-	0.0	1,410	120
Total	179	1,530	120	7.8	-	-	-	-	-	0.0	1,410	120

TABLE B - SHEET 3
Accumulative Series - NET

STATUS OF RIBES ERADICATION ON INDIAN LANDS, DECEMBER 31, 1950

NORTH CENTRAL REGION

Indian Lands	Total Acres White	Control Area (W.P. & Prot. Zone)	First Working		Second Working		Other Workings		Maintenance		Remaining Work	
			Acres	Per- cent	Acres	Per- cent	Acres		Acres	Per- cent	Unworked Acres	Requiring Rework (Col. 4-8)
Sac-Fox, Iowa	45	500	500	100.0	206	-	-	-	-	-	-	500
Grand Portage, Minn.	1,097	1,503	1,294	86.1	835	319	319	0.0	209	0.0	1,294	1,294
Leech Lake, Minn.	2,432	3,387	3,387	100.0	3,012	502	502	81.3	-	81.3	-	632
Nett Lake, Minn.	5,212	7,079	7,079	100.0	3,611	1,765	1,765	88.1	-	88.1	-	841
Vormilion, Minn.	78	186	186	100.0	206	435	435	100.0	-	100.0	-	-
White Earth, Minn.	502	1,056	1,056	100.0	918	808	808	51.6	-	51.6	-	511
Red Lake, Minn.	12,604	19,143	19,143	100.0	18,901	15,993	15,993	77.3	-	77.3	-	4,354
Bad River, Wis.	8,293	14,552	14,375	98.8	8,209	5,284	5,284	89.7	177	89.7	1,327	1,327
LacCourtOreilles, Wis.	13,808	25,000	23,772	95.1	10,517	3,538	3,538	55.1	1,228	55.1	9,987	9,987
LacduFlambeau, Wis.	12,453	23,367	22,367	95.7	6,866	1,436	1,436	88.0	1,000	88.0	1,801	1,801
Menominee, Wis.	21,081	35,462	32,257	91.0	19,177	6,216	6,216	40.2	3,205	40.2	17,997	17,997
Total	77,605	131,235	125,416	95.6	72,458	36,296	36,296	65.7	5,819	65.7	39,244	39,244

TABLE B - SHEET 5

Accumulative Series - NET

STATUS OF RIBES ERADICATION ON STATE AND PRIVATE LANDS, DECEMBER 31, 1950

NORTH CENTRAL REGION

State	Total Acres		First Working		Second Working Acres	Other Workings Acres	On Maintenance		Unworked Acres	Remaining Work	
	White Pine	Control Area (W.P. & Prot. Zone)	Acres	Per- cent			Acres	Per- cent		Acres	Acres (Col. 4-5)
Illinois	1,986	13,429	11,218	83.5	10,208	13,089	1,925	14.3	2,211	9,293	
Indiana	10,227	91,710	78,553	85.7	24,079	12,042	61,325	66.9	13,157	17,228	
Iowa	5,890	50,001	34,057	68.1	7,330	1,794	18,851	37.7	15,944	15,206	
Ohio	20,626	209,345	174,469	83.3	52,340	16,144	83,869	40.1	34,876	90,600	
Michigan	332,704	1,016,648	909,465	89.5	380,346	78,049	368,554	36.3	107,183	540,911	
Minnesota	139,325	384,268	278,915	72.6	69,326	7,731	60,343	15.7	105,353	218,572	
Wisconsin	366,808	1,319,685	1,092,809	82.8	342,157	30,462	524,151	39.7	226,876	568,658	
Total	977,566	3,085,086	2,579,486	83.6	885,786	159,311	1,119,018	36.3	505,600	1,460,168	

TABLE B - SHEET 6

Accumulative Series - NET

SUMMARY OF STATUS OF RIBES ERADICATION BY LAND OWNERSHIP, DECEMBER 31, 1950

NORTH CENTRAL REGION

Land Ownership

National Forests	174,048	351,713	283,014	79.8	143,237	52,555	184,122	51.9	71,699	98,898
National Parks	179	1,530	120	7.8	-	-	-	0.0	1,410	120
Indian Lands	77,605	131,235	125,416	95.6	72,458	36,296	86,172	65.7	5,819	39,244
Total-Federal	251,832	487,478	408,550	83.8	215,695	88,851	270,294	55.4	78,928	138,256
State & Private Lands	877,566	3,085,086	2,579,486	83.6	885,786	159,311	1,119,018	36.3	505,600	1,460,168
Total	1,129,398	3,572,564	2,988,036	83.6	1,101,481	248,162	1,389,312	38.9	1,284,528	1,598,724

TABLE B - SHEET 7

Accumulative Series - NET

STATUS OF RIBES ERADICATION ON INTERMINGLED LANDS, DECEMBER 31, 1950

NORTH CENTRAL REGION

Intermingled Lands	Total Acres Control Area (White Pine & Prot. Zone)	First		Second		Other		On Maintenance		Remaining Work	
		Working		Working		Workings		Per-		Unworked	
		Acres	Per- cent	Acres	Per- cent	Acres	Per- cent	Acres	cent	Acres	Requiring New Work Acres (Col. 4-8)
Michigan	133,901	126,315	94.3	49,500	9,950	48,599	36.2	7,586	77,716		
Minnesota	71,292	37,361	52.4	2,258	-	3,422	4.8	33,931	33,939		
Wisconsin	24,288	21,374	88.0	18,917	367	7,302	30.1	2,914	24,072		
Total	229,481	185,050	80.6	70,675	10,317	59,323	25.9	14,131	125,727		

TABLE C - SHEET 1

Accumulative Series - GROSS

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES 1918 - 1950

NORTH CENTRAL REGION

State	Operating Agency	FIRST WORKING				SECOND WORKING				
		Acres		Total Acres	Ribes Destroyed	Man-Days	Acres		Ribes Destroyed	Man-Days
		Without Ribes	With Ribes							
Illinois	Bureau-State	2,680	17,471	20,151	1,506,825	3,884	10,208	613,193	2,510	
Indiana	Bureau-State	38,937	24,189	63,126	475,924	4,040	24,079	103,621	1,120	
Iowa	Bureau-State	-	38,728	38,728	3,592,507	27,212	7,330	711,605	5,274	
	Indian Service	-	500	500	13,462	169	206	3,592	57	
	Total	-	39,228	39,228	3,605,969	27,381	7,536	715,197	5,331	
Ohio	Bureau-State	49,632	151,800	201,432	2,574,668	33,038	52,310	724,371	12,116	
Michigan	Bureau-State	-	1,239,123	1,239,123	60,219,216	252,692	386,563	7,231,585	45,418	
	Forest Service	-	101,808	101,808	5,266,235	28,302	59,673	1,036,264	10,307	
	Total	-	1,340,931	1,340,931	65,485,451	280,994	446,236	8,267,849	55,725	
Minnesota	Bureau-State	-	324,607	324,607	44,591,195	110,998	74,798	4,144,779	21,290	
	Forest Service	-	69,068	69,068	7,261,907	38,037	23,218	1,435,789	11,920	
	Indian Service	-	31,890	31,890	10,254,955	19,328	26,851	2,790,035	13,159	
	Total	-	425,565	425,565	62,108,057	168,363	124,867	8,370,603	46,375	
Wisconsin	Bureau-State	-	1,221,552	1,221,552	62,547,880	271,229	354,992	5,220,930	45,440	
	Forest-Service	-	53,333	53,333	4,636,564	29,208	36,454	829,744	10,225	
	Indian Service	-	97,627	97,617	20,860,767	69,816	44,769	3,631,951	25,191	
	Total	-	1,372,502	1,372,502	88,045,211	370,253	436,215	9,682,645	80,856	
All States	Bureau-State	91,249	3,057,470	3,148,719	175,508,215	703,093	910,310	18,750,110	139,512	
	Forest Service	-	224,209	224,209	17,164,706	95,547	119,345	3,301,797	32,452	
	Park Service	-	-	-	-	-	-	-	-	
	Indian Service	-	130,007	130,007	31,129,184	89,313	71,826	6,425,578	38,407	
Total		91,249	3,411,686	3,502,935	223,802,105	887,953	1,101,481	28,477,485	204,371	

TABLE C - SHEET 2

Accumulative Series - GROSS

SUMMARY OF RIBES ERADICATION BY STATES AND OPERATING AGENCIES 1918 - 1950

NORTH CENTRAL REGION

State	Operating Agency	OTHER WORKINGS					ALL WORKINGS					PER ACRE	
		Acres	Ribes Destroyed	Man-Days	Acres		Total Acres.	Ribes Destroyed	Man-Days			Ribes	Days
					Without Ribes	With Ribes							
Illinois	Bureau-State	13,009	566,428	3,668	2,680	10,768	43,448	2,686,446	10,072			61.6	0.2
	Bureau-State	12,042	35,463	356	50,957	90,310	129,247	515,014	5,517			4.8	0.0
	Bureau-State	1,794	148,127	1,454	-	47,852	47,852	4,452,239	33,940			93.0	0.7
	Indian Service	-	-	-	-	706	706	17,054	226			24.2	0.3
Total		1,794	148,127	1,454	-	48,558	48,558	4,469,293	34,165			92.0	0.7
Ohio	Bureau-State	16,144	173,786	2,450	49,632	230,284	279,916	3,472,825	47,932			12.4	0.1
	Bureau-State	80,507	1,021,702	8,891	-	1,706,193	1,706,193	68,472,503	307,001			40.1	0.1
	Forest Service	26,603	192,397	3,853	-	188,084	188,084	6,494,896	42,462			34.5	0.2
	Total	107,110	1,214,099	12,744	-	1,894,277	1,894,277	74,967,399	349,163			39.6	0.3
Minnesota	Bureau-State	8,750	471,309	3,171	-	408,155	408,155	49,207,283	135,485			120.6	0.2
	Forest Service	12,140	383,862	5,355	-	104,426	104,426	9,081,558	55,312			87.0	0.2
	Indian Service	19,822	1,796,133	11,691	-	78,563	78,563	14,841,123	44,178			188.9	0.5
	Total	40,712	2,651,304	20,217	-	591,144	591,144	73,129,964	234,955			123.7	0.7
Wisconsin	Bureau-State	30,462	594,372	5,566	-	1,607,006	1,607,006	68,363,202	322,235			42.5	0.2
	Forest Service	10,335	293,057	4,189	-	100,122	100,122	5,759,365	43,622			57.5	0.1
	Indian Service	16,474	794,717	7,790	-	158,860	158,860	25,287,435	102,797			159.2	0.5
	Total	57,271	1,682,146	17,545	-	1,865,988	1,865,988	99,410,002	468,654			53.3	0.7
All States	Bureau-State	162,788	3,011,187	25,556	91,249	4,130,568	4,221,817	197,269,512	882,161			46.7	0.2
	Forest Service	49,078	869,316	13,397	-	392,632	392,632	21,335,619	141,396			54.3	0.5
	Park Service	-	-	-	-	-	-	-	-			-	-
	Indian Service	36,296	2,590,850	19,481	-	238,129	238,129	40,145,612	147,201			168.6	0.7
Total		248,162	6,471,353	58,434	91,249	4,761,329	4,852,578	258,750,943	1,150,758			53.3	0.7

TABLE C - SHEET 3

Accumulative Series - GROSS

ACCUMULATIVE SUMMARY OF RIBES ERADICATION BY FOREST SERVICE 1918 - 1950

NORTH CENTRAL REGION

National Forests	THIRD AND OTHER WORKINGS										A L L		W O R K I N G	
	FIRST WORKING				SECOND WORKING				WORKINGS		Acres	Ribes Destroyed	Man- Days	
	Acres	Ribes Destroyed	Man- Days		Acres	Ribes Destroyed	Man- Days		Acres	Ribes Destroyed				Man- Days
Huron, Mich.	5 826	66,634	538	1,738	27,176	165	128	464	5	7,692	94,274	760		
Manistee, Mich.	17,076	147,938	795	14,218	19,201	201	4,465	5,971	74	35,759	173,110	1,070		
Marquette, Mich.	23,962	652,999	6,274	14,035	134,630	2,541	7,880	30,617	664	45,877	818,246	9,100		
Hiawatha, Mich.	26,761	472,119	4,832	15,151	114,280	1,682	3,520	15,269	298	15,432	601,668	6,800		
Ottawa, Mich.	28,183	3,926,545	15,863	14,531	740,977	5,718	10,610	140,076	2,812	53,324	4,807,598	24,300		
Superior, Minn.	41,084	4,875,613	25,794	15,976	1,170,565	9,268	10,782	329,278	4,944	67,842	6,375,456	10,000		
Chippewa, Minn.	27,984	2,386,294	12,243	7,242	265,224	2,652	1,358	54,584	111	36,584	2,706,102	15,300		
Chequamegon, Wis.	30,024	2,552,929	16,109	20,781	542,726	6,572	5,355	186,167	2,395	56,160	3,281,822	25,070		
Nicolet, Wis.	23,309	2,083,635	13,099	15,673	287,018	3,653	4,980	106,890	1,794	43,962	2,477,513	18,500		
Total	224,809	17,164,706	95,547	119,345	3,301,797	32,452	49,078	869,316	13,397	392,632	21,335,819	141,370		

ACCUMULATIVE SUMMARY OF RIBES ERADICATION BY INDIAN SERVICE 1918 - 1950

Indian Reservation	NORTH CENTRAL REGION						THIRD AND OTHER WORKINGS						A L L W O R K I N G	
	FIRST WORKING			SECOND WORKING			WORKINGS			A L L W O R K I N G			A L L W O R K I N G	
	Acres	Destroyed Ribes	Man- Days	Acres	Destroyed Ribes	Man- Days	Acres	Destroyed Ribes	Man- Days	Acres	Destroyed Ribes	Man- Days	Acres	Destroyed Ribes
Sac-Fox, Iowa	500	13,462	169	206	3,592	57	-	-	-	706	17,054	-	-	-
Grand Portage, Minn.	1,620	2,367,154	4,525	835	336,405	1,387	319	51,415	329	2,774	2,754,974	6,300	6,300	6,300
Leech Lake, Minn.	1,648	326,352	732	2,380	153,271	620	502	90,689	376	4,530	570,312	1,700	1,700	1,700
Nett Lake, Minn.	7,126	527,722	1,841	3,611	321,890	2,604	1,765	209,484	1,966	12,502	1,059,096	6,400	6,400	6,400
Vermilion, Minn.	286	137,530	424	206	29,912	210	435	41,679	485	927	209,121	1,310	1,310	1,310
White Earth, Minn.	372	145,958	485	918	204,927	673	808	134,029	543	2,098	484,914	1,700	1,700	1,700
Red Lake, Minn.	20,838	6,750,239	11,321	18,901	1,743,630	7,665	15,993	1,268,837	7,992	55,732	9,762,706	26,370	26,370	26,370
Bad River, Wis.	14,777	8,216,882	18,888	8,209	1,387,246	5,860	5,284	587,714	3,057	28,270	10,191,842	27,900	27,900	27,900
LacCourtOreilles, Wis.	20,134	1,544,151	11,378	10,517	464,846	3,835	3,538	16,848	641	34,189	2,025,845	15,850	15,850	15,850
Lac du Flambeau, Wis.	22,464	771,317	4,389	6,866	48,033	401	1,436	481	11	30,766	819,831	4,800	4,800	4,800
Menominee, Wis.	40,242	10,328,417	35,161	19,177	1,731,826	15,095	6,216	189,674	4,081	65,635	12,249,917	54,330	54,330	54,330
Total	130,007	31,129,184	89,313	71,826	6,425,578	38,407	36,296	2,590,850	19,481	238,129	40,145,612	147,800	147,800	147,800

TABLE D - SHEET 1

ACCUMULATIVE SUMMARY OF GROSS ACREAGE WORKED ON NATIONAL FORESTS 1918 - 1950

National Forests	NORTH CENTRAL REGION				
	First Working		Total Acres	Second Working Acres	Other Workings Acres
	Without Ribes Acres	With Ribes Acres			
Shawnee, Illinois	50	-	50	-	50
Hoosier, Indiana	179	-	179	-	179
Wayne, Ohio	2,758	1,271	4,029	-	4,029
Huron, Michigan	-	8,346	8,346	2,138	128
Manistee, Michigan	-	72,217	72,217	15,689	5,578
Marquette, Michigan	-	27,487	27,487	14,035	8,400
Hiawatha, Michigan	-	32,131	32,131	16,706	4,040
Ottawa, Michigan	-	30,235	30,235	17,322	10,915
Superior, Minnesota	-	46,750	46,750	16,817	10,782
Chippewa, Minnesota	-	37,314	37,314	11,241	2,377
Chequamegon, Wisconsin	-	40,347	40,347	30,588	5,355
Nicolet, Wisconsin	-	29,433	29,433	18,701	4,980
Total	2,987	325,531	328,518	143,231	54,555
					524,310

TABLE D - SHEET 2

ACCUMULATIVE SUMMARY OF GROSS ACREAGE WORKED ON NATIONAL PARKS 1918 - 1950

National Park	NORTH CENTRAL REGION				
	First Working		Total Acres	Second Working Acres	Other Workings Acres
	Without Ribes Acres	With Ribes Acres			
Isle Royale, Michigan	-	120	120	-	120

Accumulative Series - GROSS

TABLE D - SHEET 3

ACCUMULATIVE SUMMARY OF GROSS ACREAGE WORKED ON INDIAN LANDS 1918 - 1950

Indian Reservation	NORTH CENTRAL REGION				
Sac-Fox, Iowa	-	500	500	206	706
Grand Portage, Minnesota	-	1,620	1,620	835	2,774
Leech Lake, Minnesota	-	3,323	3,323	3,012	6,837
Nett Lake, Minnesota	-	7,126	7,126	3,611	12,502
Vermilion, Minnesota	-	286	286	206	927
White Earth, Minnesota	-	1,354	1,354	918	3,080
Red Lake, Minnesota	-	20,838	20,838	18,901	55,732
Bad River, Wisconsin	-	14,777	14,777	8,209	28,270
Lac Court Oreilles, Wisconsin	-	20,134	20,134	10,517	34,189
Lac du Flambeau, Wisconsin	-	22,464	22,464	6,866	30,766
Menominee, Wisconsin	-	40,242	40,242	19,177	65,635
Total	-	132,664	132,664	72,458	241,418

= 319
 502
 1,765
 435
 808
 15,993
 5,284
 3,538
 1,436
 6,216

TABLE D - SHEET 5

ACCUMULATIVE SUMMARY OF GROSS ACREAGE WORKED ON STATE AND PRIVATE LANDS 1918 - 1950

State	NORTH CENTRAL REGION				
	First Working		Total Acres	Second Working Acres	Other Workings Acres
	Without Ribes Acres	With Ribes Acres			
Illinois	2,630	17,471	20,101	10,208	13,089
Indiana	38,758	54,189	92,947	24,079	12,042
Iowa	-	38,728	38,728	7,330	1,794
Ohio	46,874	160,529	207,403	52,340	16,144
Michigan	-	1,170,395	1,170,395	380,346	78,049
Minnesota	-	306,954	306,954	69,326	7,731
Wisconsin	-	1,205,105	1,205,105	342,157	30,462
Total	88,262	2,953,271	3,041,633	885,786	159,311
					4,086,730

TABLE D - SHEET 6

ACREAGE WORKED BY LAND OWNERSHIP 1918 - 1950

NORTH CENTRAL REGION				
Land Ownership	Without Ribes Acres	With Ribes Acres	Total Acres	Second Working Acres
National Forest	2,987	325,531	328,518	143,237
National Park	-	120	120	-
Indian	-	132,664	132,664	72,458
Subtotal - Interior	-	132,784	132,784	72,458
Total - Federal	2,987	458,315	461,302	215,695
State and Private	88,262	2,953,371	3,041,633	885,786
Grand Total	91,249	3,411,686	3,502,935	1,101,481
				248,162
				4,052,578

TABLE G

SUMMARY OF ALL RIBES ERADICATION BY STATES, OPERATING AGENCIES, AND PROGRAMS 1918 - 1950

State	Operating Agency	NORTH CENTRAL REGION					
		Regular and Cooperative			All Emergency Programs		
		Acres	Destroyed Ribes	Man-Days	Acres	Destroyed Ribes	Man-Days
Illinois	Bureau-State	26,519	783,713	3,662	16,929	1,902,733	6,409
Indiana	Bureau-State	69,611	194,988	1,095	59,636	420,026	4,422
Iowa	Bureau-State	10,789	1,048,540	8,823	37,063	3,403,699	25,117
	Indian Service	500	14,074	168	206	2,980	58
	Total	11,289	1,062,614	8,991	37,269	3,406,679	25,175
Ohio	Bureau-State	72,179	187,722	6,060	207,737	3,285,993	41,872
Michigan	Bureau-State	450,800	5,870,394	34,644	1,255,393	62,602,109	272,357
	Forest Service	90,852	1,287,054	13,719	97,232	5,207,842	28,743
	Total	541,652	7,157,448	48,363	1,352,625	67,809,951	301,100
Minnesota	Bureau-State	32,626	1,720,301	14,762	375,529	47,486,982	120,703
	Forest Service	42,308	2,590,890	25,263	62,118	6,490,668	30,049
	Indian Service	31,985	4,544,562	21,456	46,578	10,296,561	22,722
	Total	106,919	9,855,753	61,481	484,225	64,274,213	173,474
Wisconsin	Bureau-State	665,213	9,253,008	49,709	941,793	59,110,194	272,526
	Forest Service	44,110	1,120,914	13,907	56,012	4,638,451	29,715
	Indian Service	86,106	4,431,901	35,499	72,754	20,855,534	67,298
	Total	795,429	14,805,823	99,115	1,070,559	84,604,179	369,539
All States	Bureau-State	1,327,737	19,058,676	118,755	2,894,080	178,210,836	743,406
	Forest Service	177,270	4,998,858	52,889	215,362	16,336,961	88,507
	Indian Service	118,591	8,990,537	57,123	119,538	31,155,075	90,078
	Total	1,623,598	33,048,071	228,767	3,228,980	225,702,872	921,991
Grand Total					4,852,578	358,750,943	1,150,754

Date	Description	Debit	Credit	Balance
1890				
Jan 1	Balance forward			100.00
Jan 15	Received from A. B.	50.00		150.00
Jan 20	Paid to C. D.	25.00		125.00
Feb 1	Received from E. F.		75.00	200.00
Feb 10	Paid to G. H.	30.00		170.00
Feb 25	Received from I. J.		40.00	210.00
Mar 1	Paid to K. L.	15.00		195.00
Mar 15	Received from M. N.		60.00	255.00
Mar 20	Paid to O. P.	20.00		235.00
Apr 1	Received from Q. R.		55.00	290.00
Apr 10	Paid to S. T.	10.00		280.00
Apr 25	Received from U. V.		35.00	315.00
May 1	Paid to W. X.	25.00		290.00
May 15	Received from Y. Z.		45.00	335.00
May 20	Paid to A. B.	15.00		320.00
Jun 1	Received from C. D.		65.00	385.00
Jun 10	Paid to E. F.	30.00		355.00
Jun 25	Received from G. H.		50.00	405.00
Jul 1	Paid to I. J.	20.00		385.00
Jul 15	Received from K. L.		40.00	425.00
Jul 20	Paid to M. N.	15.00		410.00
Aug 1	Received from O. P.		55.00	465.00
Aug 10	Paid to Q. R.	25.00		440.00
Aug 25	Received from S. T.		35.00	475.00
Sep 1	Paid to U. V.	10.00		465.00
Sep 15	Received from W. X.		45.00	510.00
Sep 20	Paid to Y. Z.	20.00		490.00
Oct 1	Received from A. B.		60.00	550.00
Oct 10	Paid to C. D.	30.00		520.00
Oct 25	Received from E. F.		50.00	570.00
Nov 1	Paid to G. H.	25.00		545.00
Nov 15	Received from I. J.		40.00	585.00
Nov 20	Paid to K. L.	15.00		570.00
Dec 1	Received from M. N.		55.00	625.00
Dec 10	Paid to O. P.	20.00		605.00
Dec 25	Received from Q. R.		35.00	640.00
Total		1000.00	1000.00	

Account of Dr. - Cash - Received from A. B. - 100.00 - 100.00

1890

Received from A. B.

